THE DR WHO

Annual
1977

Starring
TOM BAKER
as DR WHO

Authorised edition
as seen on
BBC tv

THE
DR
WHO
ANNUAL 1977

SBN 7235 0369 9

CROMPTON

THE DR WHO
ANNUAL 1977

CONTENTS

Stories

Page No

War on Aquatica ... 4
Cyclone Terror ... 13
The Time Snatch ... 25
The Eye-Spiders of Pergross ... 43
Detour to Diamedes ... 54
Double Trouble ... 64
Secret of The Bald Planet ... 71

Picture Stories

The Body Snatcher ... 34
Menace on Metalupiter ... 58

Features

Maze of Mystery ... 9
Reach For The Sky! ... 10
Twinkle, Twinkle, Little Satellite! ... 12
The Airship Rises to Fame ... 17
Space Has a Word For It! ... 20
More To It Than Meets The Eye! ... 21
Space Scrapbook ... 22
Astronauts Spell Space ... 23
Space Facts and Fancies ... 24
A Space Riddle-Me-Ree ... 30
Pick The Planet People ... 31
Skylark—Soaring High ... 32
The Terror Trail ... 40
Problem of The Painted Planet ... 42
Dr Who's Crossword ... 49
Space Talk ... 50
Out of This World ... 52
Drum Beat In Space ... 53
Pick The Planets ... 68
Mooning About ... 70
The Name's The Same ... 78

Copyright © MCMLXXVI by
British Broadcasting Corporation
All rights reserved throughout the world.

Published in Great Britain by
World Distributors (Manchester) Limited,
P.O. Box 111, 12 Lever Street,
Manchester, M60 1TS,
by arrangement with the
British Broadcasting Corporation.
Printed in Great Britain by
Jarrold & Sons Limited, Norwich.
SBN 7235 0369 9

£1·25

WAR ON AQUATICA

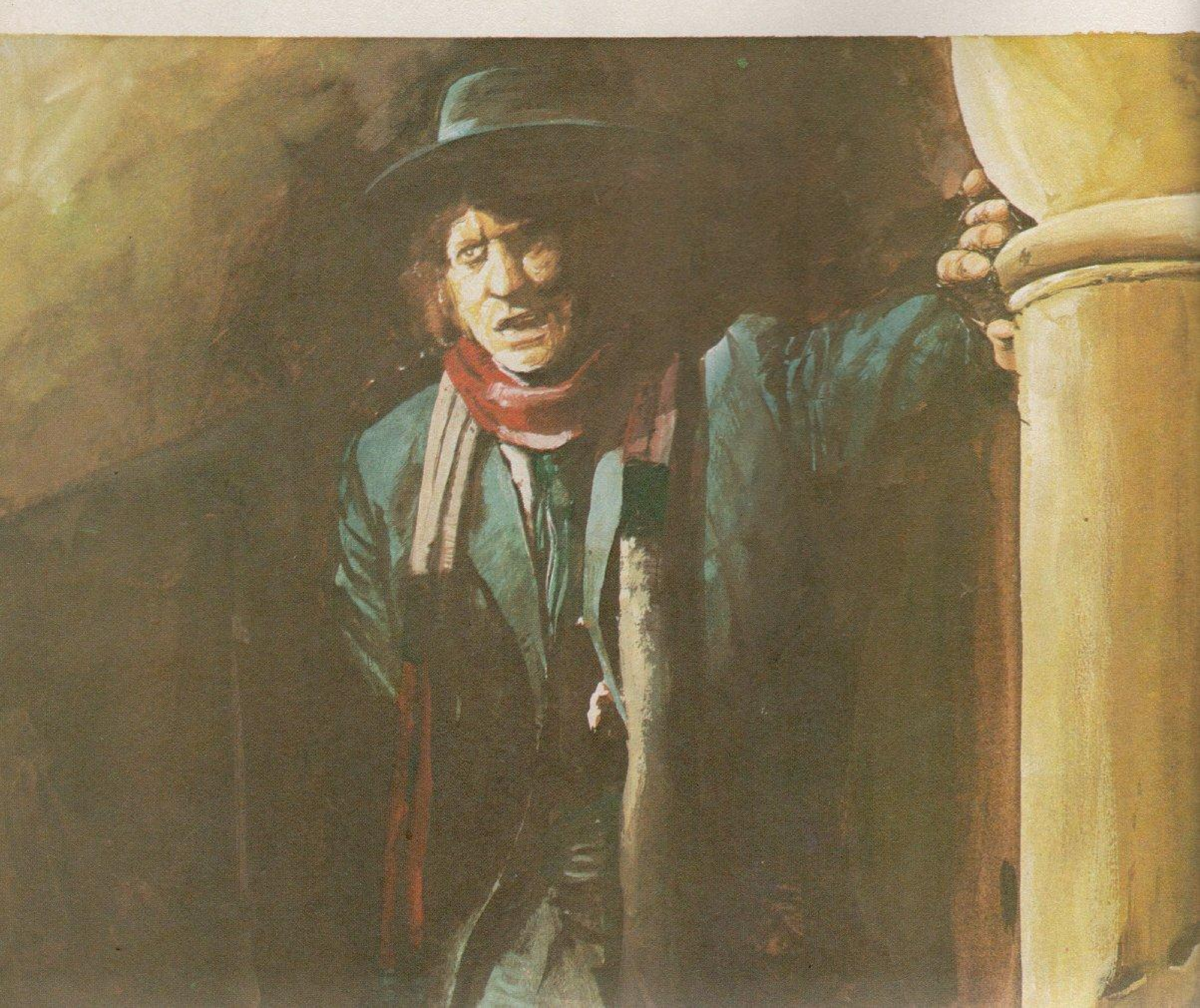
"Oh, I don't know what we can do, Levi!" groaned the Doctor. "There must be *some* way to escape the clutches of these clever, but unfeeling Medusians!"

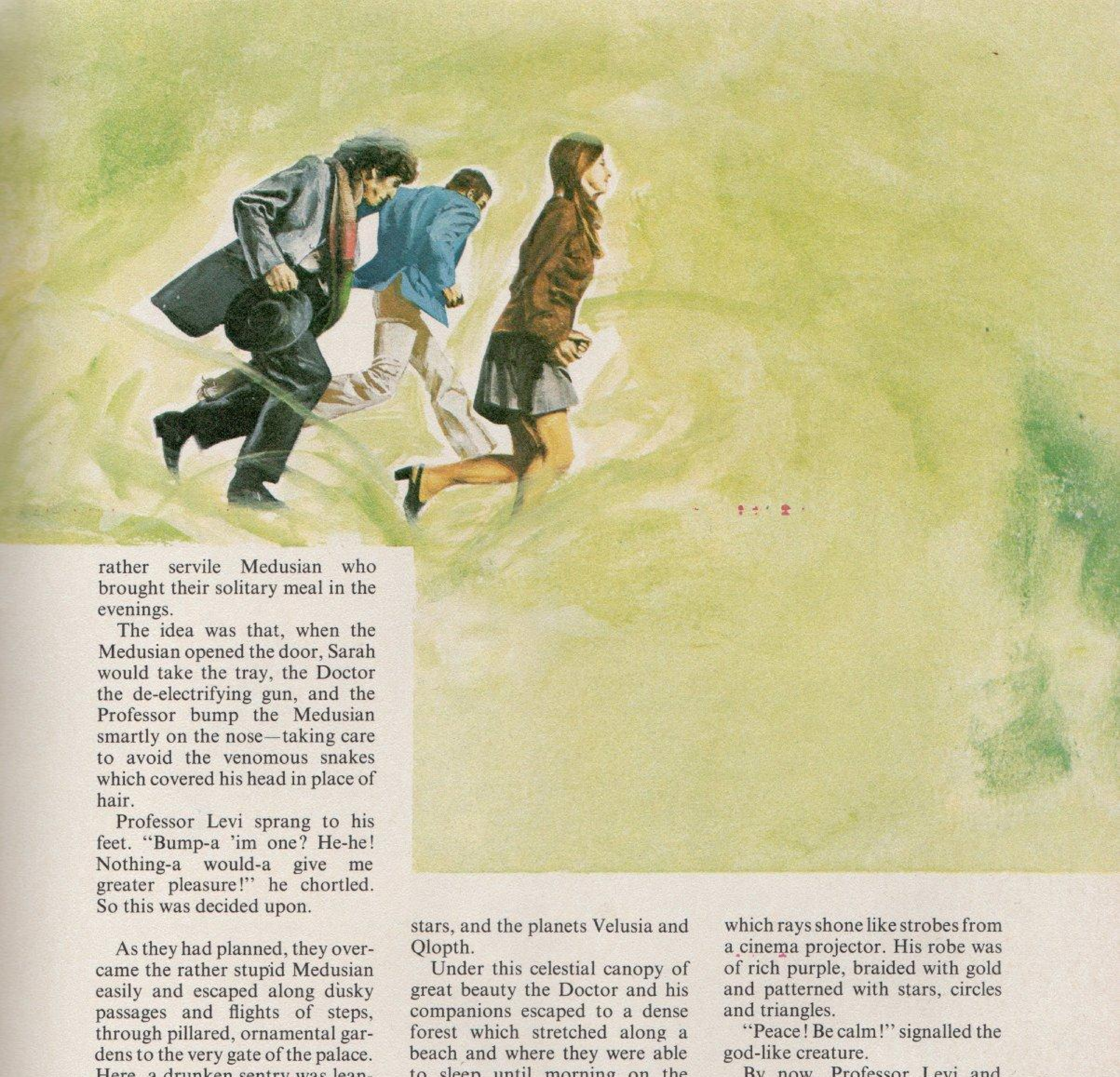
Here they were—Sarah Jane, Professor Vittorio Levi and himself—incarcerated in the palace, in a marble-walled room, the doors of which were lethally electrified, all because the Tardis had proved so interesting to the Medusians that nothing short of repeated interrogation on how it was invented, how it worked, and where it had been, would in any way satisfy them!

". . . and it is a wonder they did not-a turn the evil eye upon us!" the Professor had exclaimed monotonously, much to the annoyance of the Doctor and Sarah.

It was the year 3999, and they were in Medusia, one of the three kingdoms of the planet Aquatica, the other two being Matterdom and Phyllosia. The Doctor's colleague and friend, Professor Levi, a zoologist, botanist, astronomer, anthropologist and amateur space traveller was suffering from a bout of extreme disappointment. The trouble was that he had been so enthusiastic about the trip—he had viewed the planet time and time again through his long-range radio superscope—that he was finding their imprisonment intolerable. Clever, even inspired, ideas of escaping had fallen flat, and now the three time travellers began to feel both frustrated and dejected, agreeing that perhaps their adversaries were creatures to daunt anyone.

It was Sarah, however, who suggested an ordinary idea which, after consideration, was thought to be extremely practicable. It was that they should overpower the





rather servile Medusian who brought their solitary meal in the evenings.

The idea was that, when the Medusian opened the door, Sarah would take the tray, the Doctor the de-electrifying gun, and the Professor bump the Medusian smartly on the nose—taking care to avoid the venomous snakes which covered his head in place of hair.

Professor Levi sprang to his feet. "Bump-a 'im one? He-he! Nothing-a would-a give me greater pleasure!" he chortled. So this was decided upon.

As they had planned, they overcame the rather stupid Medusian easily and escaped along dusky passages and flights of steps, through pillared, ornamental gardens to the very gate of the palace. Here, a drunken sentry was leaning against the wall, dozing, and so it was simple to extract the gate-keys from the pocket of his robe and open the heavy gate to freedom. His hair-serpents hissed at them but, as they passed through the gate, the drunken Medusian slept on.

The star called Kzul had set hours before, its glorious light was now fled; but two bright moons lit up the inky sky, a galactic cluster of marvellous brilliance; with vast numbers of other stars, and the planets Velusia and Qlopth.

Under this celestial canopy of great beauty the Doctor and his companions escaped to a dense forest which stretched along a beach and where they were able to sleep until morning on the large spongy leaves of the lilies-of-darkness, their flowers bright under the two moons.

Birds were singing in the trees as the Doctor opened his eyes. But then he shot up, startled.

The 'being' standing over him was amazing—like an apparition from a dream. His long silver hair fell like shafts of moonlight to his shoulders, and round the tall body a golden aura shone. His eyes were sapphire-blue, from which rays shone like strobes from a cinema projector. His robe was of rich purple, braided with gold and patterned with stars, circles and triangles.

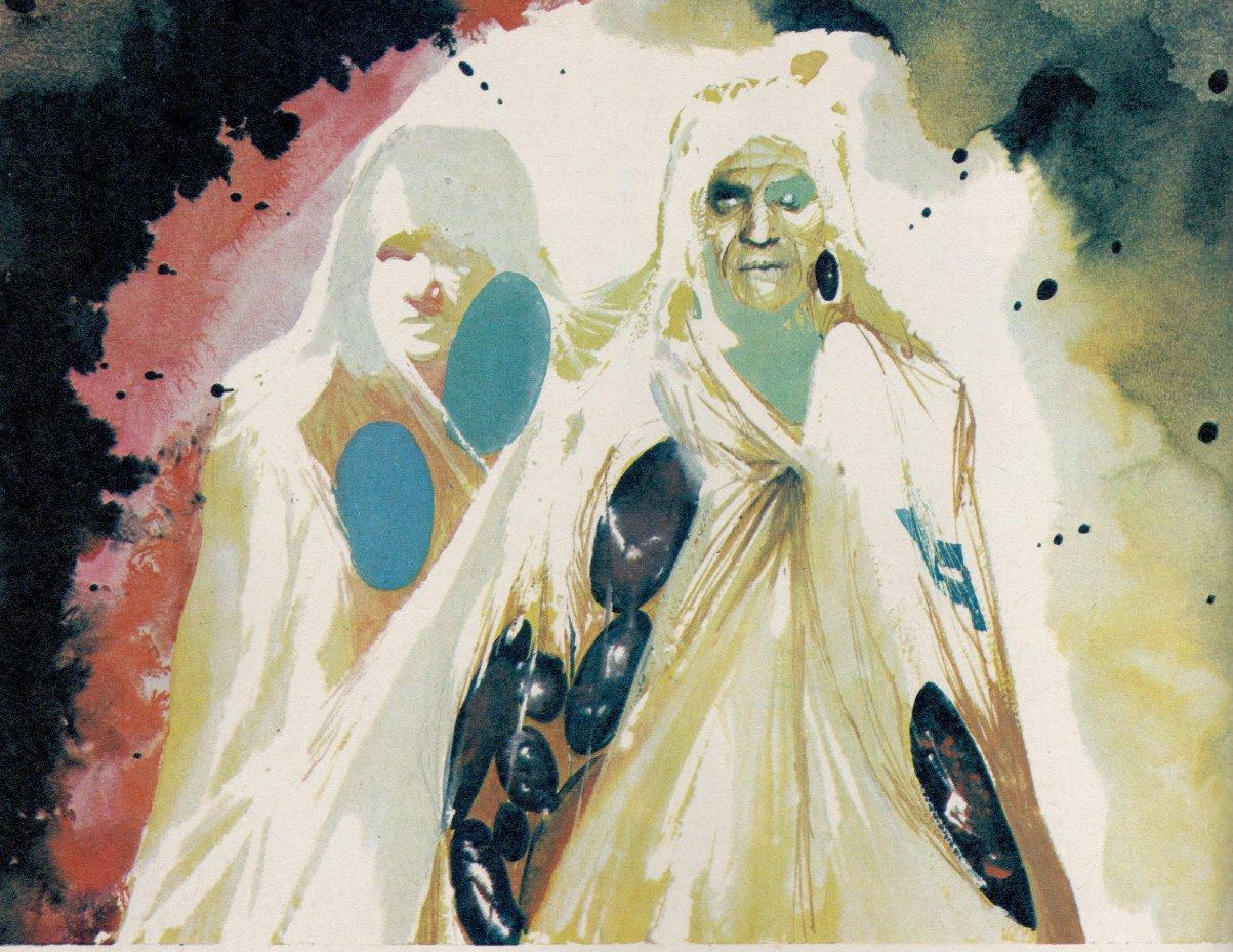
"Peace! Be calm!" signalled the god-like creature.

By now, Professor Levi and Sarah were awake and were gaping at him with as much amazement as the Doctor himself.

The creature's lips did not move; instead his temples pulsated as he communicated his thoughts.

"Who *are* you?" whispered Sarah.

"Earthling, I am Phyllos. I come from Phyllosia—the kingdom that borders the Lumid Sea. I am a teacher of the Eternal Laws, and Master to the Phyllosians," he signalled. "But come! You



must follow me to my cave where I shall shelter you until the time when you must reveal yourselves, and when justice shall be done. Come, don't delay!"

Phyllos led them through the forest to a cave cut deep in rock. As they approached, a great stone rolled back.

"Dyonne!" he telepathised. "Where are you? Come and welcome our guests!"

From the far end of the cave, which was anything but primitive, being subtly-lit and very comfortable, a woman approached them. She was very beautiful, auraed also, and having silver hair; her eyes were blue and she wore a robe similar to her husband's, which glittered with stars, circles and triangles.

"Welcome!" she said, "and come and have some food. Look, I've prepared breakfast for you."

Over the meal, Phyllos told them of the conflict between the three kingdoms of Aquatica. . . .

"The trouble is, my friends, that the Medusians are filled with greed, which is a pity. They are of a high intelligence, have telepathic powers and incredible magnetism. But they are an unfeeling, miserly race, and cause the rest of us endless trouble."

"What is the cause of the conflict?" asked the Doctor.

"Well, the Mattermonks of Matterdom possess glyt-mines—glyt is a scintillating mineral of great value—so, I am afraid, there have been continual Medusian raids on their stores! And not only this, but with their magnetic powers the Medusians attract the unfortunate Matterdomian ships to their shores, mesmerise the Mattermonks, then steal both the glyt and the ships," explained Phyllos.

"Everywhere there are the greedy ones!" said Professor Levi.

"Indeed! And so I am certain war will come between Medusia and Matterdom, and that, most unwillingly, our peace-loving people, the Phyllosians, will be drawn into it," Phyllos continued.

"But why is that, Phyllos? Surely the conflict is between the other two only," said Sarah.

"You are correct. But you see—they have been stealing our Lumidolphs," Phyllos replied.

Sarah enquired what these were, and Phyllos explained that they were fluorescent dolphin-like creatures with whom they could communicate, and who fished for them, daily, in the Lumid Sea.

"But what do they want the Lumidolphs *for*? The Medusians don't sound like animal fanciers to me!" Sarah remarked.

"They are not, no!" Phyllos replied. "They have started training the stolen Lumidolphs to carry warheads! So, you see, war is definitely imminent. That is why Dyonne, my wife, and myself, are here in Matterdom as spies; though it is not an occupation I care for at all, we may later be called upon to act as intermediaries between the two kingdoms."

No sooner had Phyllos finished his story than the sound of distant gunfire reached their ears, and they all dashed helter-skelter through aisles of Palumar trees to the beach, where they hid behind rocks to observe what was happening.

A fleet of ships was almost ready to set sail and, in a massive tank, about a hundred Lumidolphs—warheads cleaving to their backs—waited listlessly. Soon they were hoisted on to the biggest ship and presently the one-eyed, marble-skinned Medusians, wearing their robes of thin, magnetic metal, boarded the ships to set sail for Matterdom.

Three days later, Phyllos, the Doctor and his two friends arrived themselves, Phyllos's streamlined motorboat having transported them. Phyllos steered the boat into the shallows and then they all helped to heave it up onto the pebbled beach.

"And now we must hurry to the palace and seek an audience with King Chympanzo," Phyllos said. Then, turning to Professor Levi, he added: "And you will find him a most interesting specimen!"

As they scaled the cliffs to the beach-road, they heard the sound of gunfire and, in the near distance, fires were blazing. Then, as they carried on along the road, they observed a fierce gun-battle between the Matterdomian and Medusian ships and also the cruel destruction of the gentle Lumidolphs as they were rocketed straight towards the enemy!

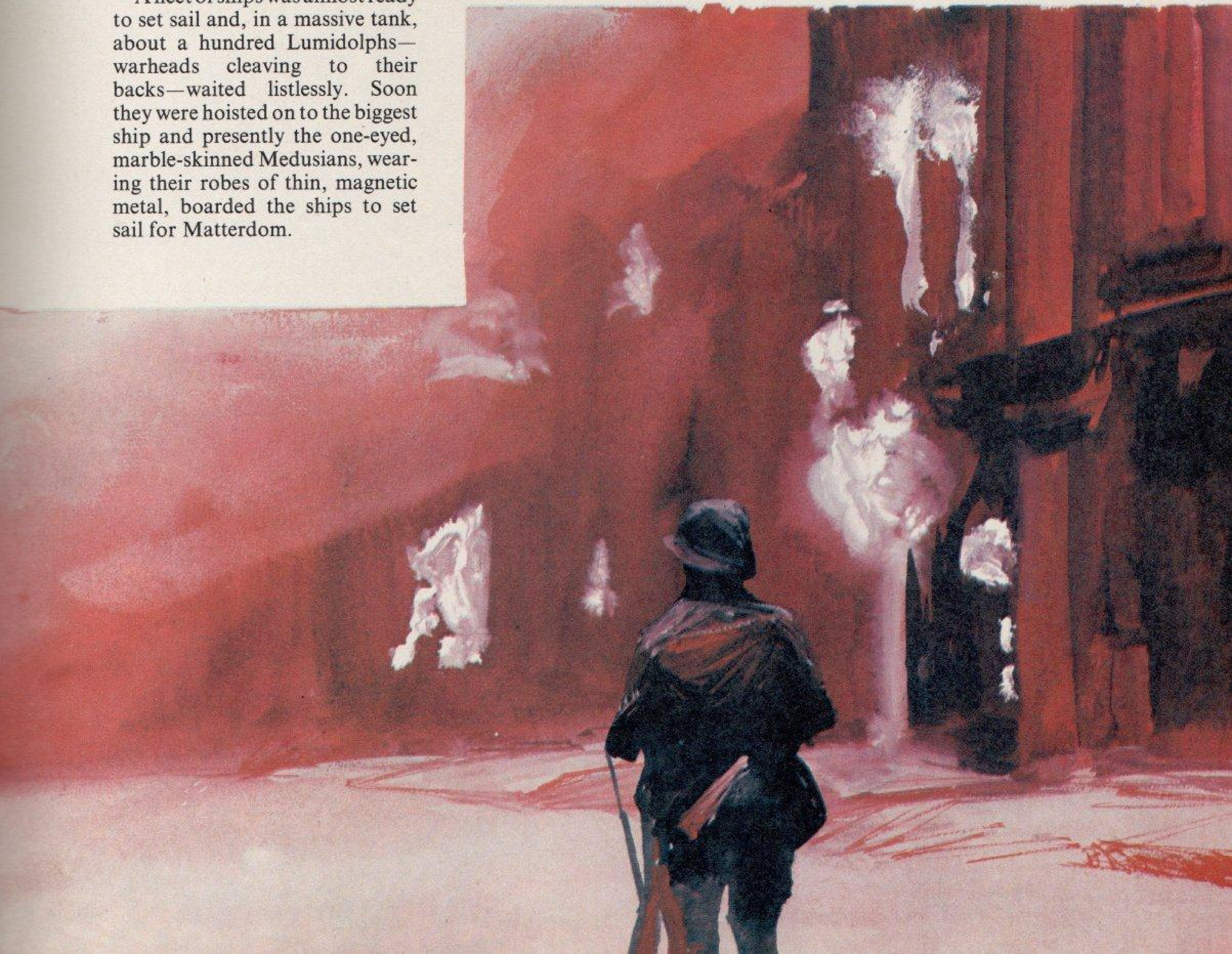
Their trek to the palace was horrendous. Buildings were blazing to right and left and gun-skirmishes were taking place sporadically in the streets. But should an unfortunate Mattermonk be confronted directly by a Medusian, he would be drawn towards him, stiffen, and fall down; completely mesmerised.

The Doctor and Professor Levi missed nothing as they stole through the war-ridden streets, both making mental notes, for future reference.

In the palace, King Chympanzo said: "I am at my wit's end to know what to do!"

"Then why not combat the Medusians by using *your* pets, the Mongs, Your Cleverness!" Phyllos suggested.

"The Mongs?" Cympanzo replied, scratching himself under his blue armpits and grinning



fiercely. "It is scarcely moral, Phyllos dear friend, to use them to attack the serpentine Medusians; but then—I suppose war never is. Indeed, even our females are bearing arms, and some of our older children! It is a dreadful state of affairs!"

While he spoke—that is, in between finding a tasty blue flea on his nicely-groomed blue fur—he was enjoying the luxury of being scratched by his pet Mong who was wondering when he was going to get his supper, the nice juicy snake Chympanzo had promised.

"The Mongs would soon put terror into the hard-hearted Medusians, Chympanzo. Believe me!" said Phyllos familiarly.

"Then—Mongs it shall be!" he said. "And tomorrow, Phyllos, I will arrange that they invade Medusia from the air. Our saucers shall transport them, and our newly-invented dissolving parachutes will drop them to the ground. They have a timing-device in the fabric, so that when the job is finished they disintegrate; then the Mongs will be set free."

And so it came about that the Mongs of Matterdom invaded Medusia. And, just as snakes quail at the sight of a mongoose, so the Medusians—roused from sleep by a terrible tugging at their serpentine hair—began to quail at the Mong invaders!

At last, broken in spirit, the Medusians abandoned their raids for glyt and suggested that Phyllos, his wife Dyonne, and the Doctor negotiate a peace treaty.

The war on Aquatica was thus brought to a timely end, and the Tardis was recovered.

The Mongs were restored to Matterdom, the Lumidolphs to Phyllosia, to which peaceful country Phyllos, Dyonne and the time-travellers returned, to be cordially welcomed by the golden-auraed, handsome Phyllosians.

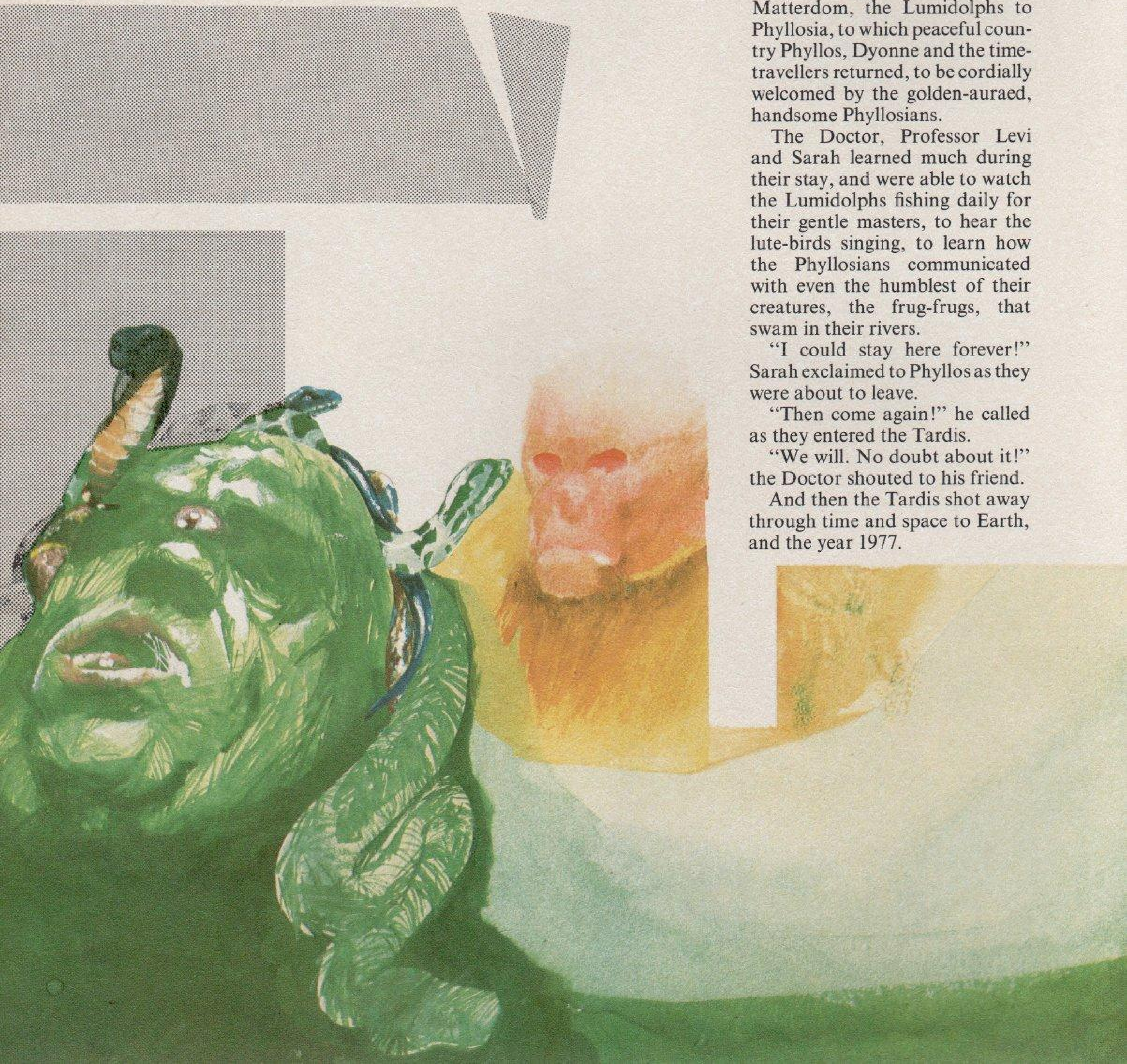
The Doctor, Professor Levi and Sarah learned much during their stay, and were able to watch the Lumidolphs fishing daily for their gentle masters, to hear the lute-birds singing, to learn how the Phyllosians communicated with even the humblest of their creatures, the frug-frugs, that swam in their rivers.

"I could stay here forever!" Sarah exclaimed to Phyllos as they were about to leave.

"Then come again!" he called as they entered the Tardis.

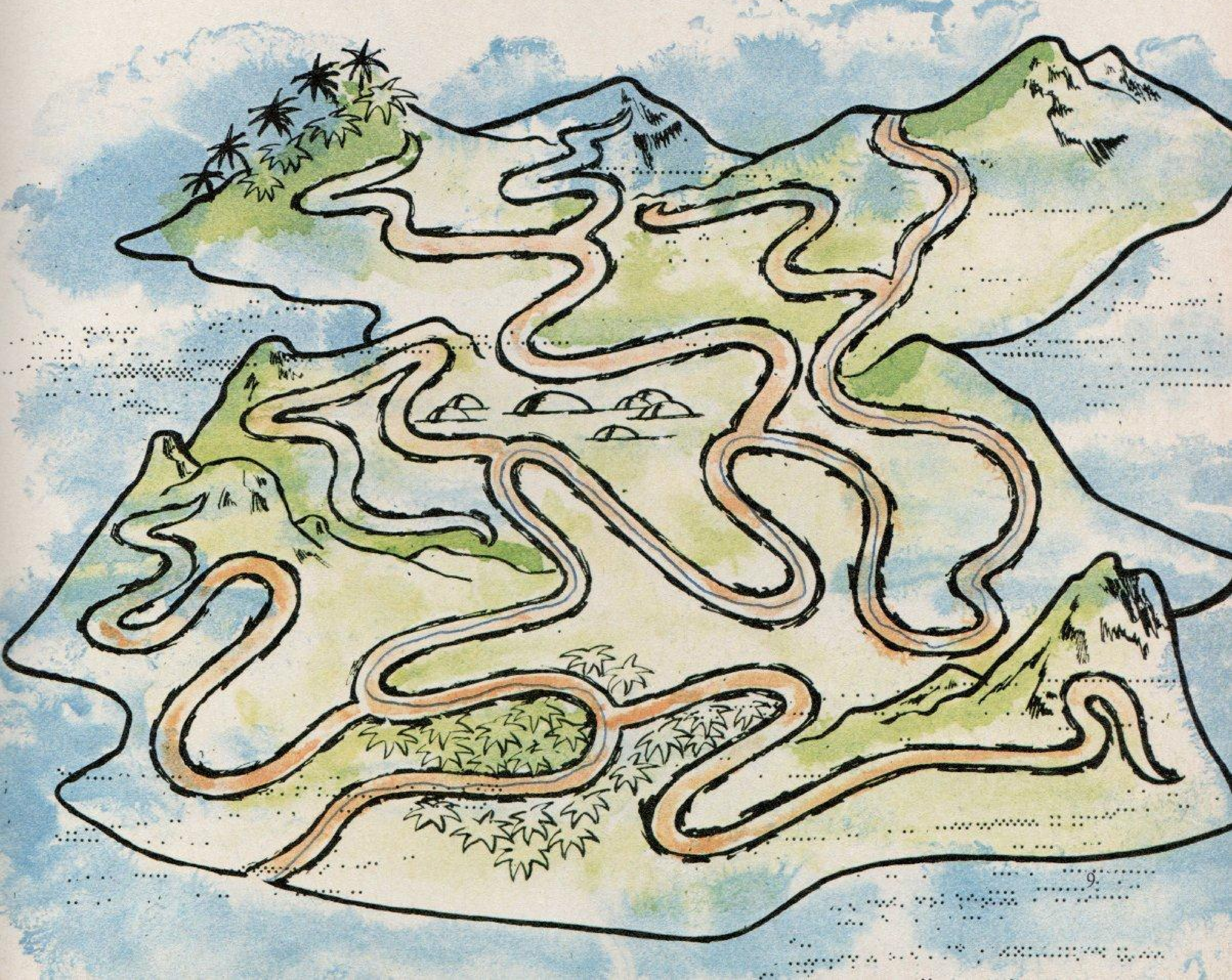
"We will. No doubt about it!" the Doctor shouted to his friend.

And then the Tardis shot away through time and space to Earth, and the year 1977.



MAZE of mystery

Among Dr. Who's souvenirs is an aerial photograph he found inside the camera of a drifting satellite, way out in the Venturas Galaxy. The photograph shows a large island, submerged about forty feet below a clear sea. The Doctor is interested in the strange formations on the island. They are obviously constructed by an intelligent life form, but for what purpose? The Doctor believes he will find the answer someday, but until then he can only guess. The most striking feature of the sunken island is the difficulty in crossing from one side to another. Can you find a way?



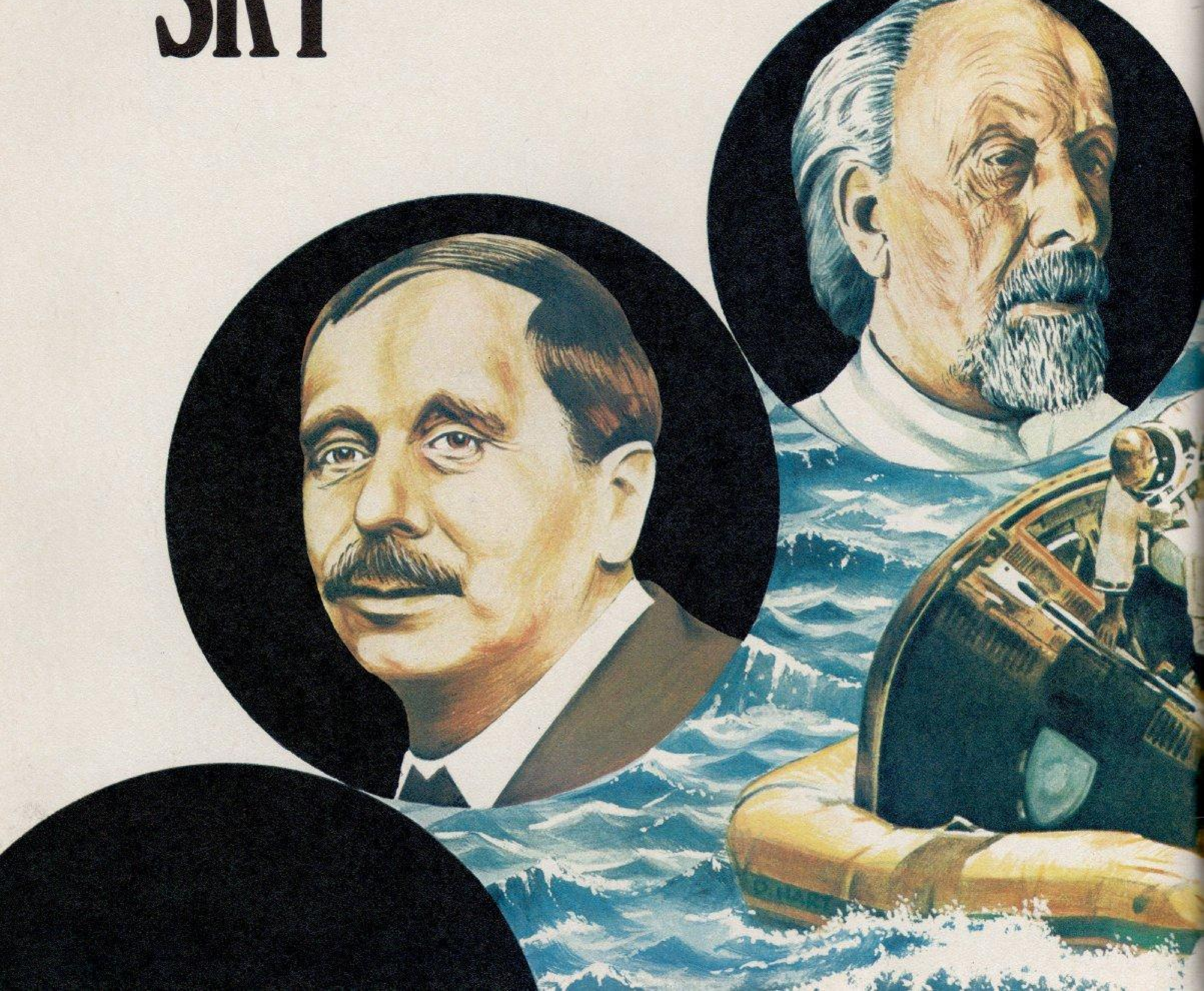
REACH FOR THE SKY

Although astronomers and astrologers have always studied the stars, it is only in the last hundred years that Man has made any attempt to reach them.

In the latter half of the nineteenth century, men like Jules Verne and H. G. Wells captured the imagination with tales of journeys to the moon and strange creatures from other planets, but although they were amazingly perceptive in their writing, they cannot have known that within a hundred years Man would actually set foot on the moon, and that rockets would be so powerful that they could travel to Mars.

During the early twentieth century, men began to put these dreams of space travel into practice, and in 1926 an American, Robert Goddard, launched the first liquid fuel rocket. It was only small, and didn't stay long in the air, but it was the first step towards the complex rockets of today.

Other men dreamed of reaching the stars too, and although many were impractical in their ideas, others realised what the problems were, and went some way towards solving them. The Russian schoolteacher Konstantin Tsiolkowski realised that



multi-staged, liquid fuel rockets would be needed before Man could hope to escape from the pull of the earth's gravity, and he also saw that special suits would have to be worn to protect the passengers of the rockets.

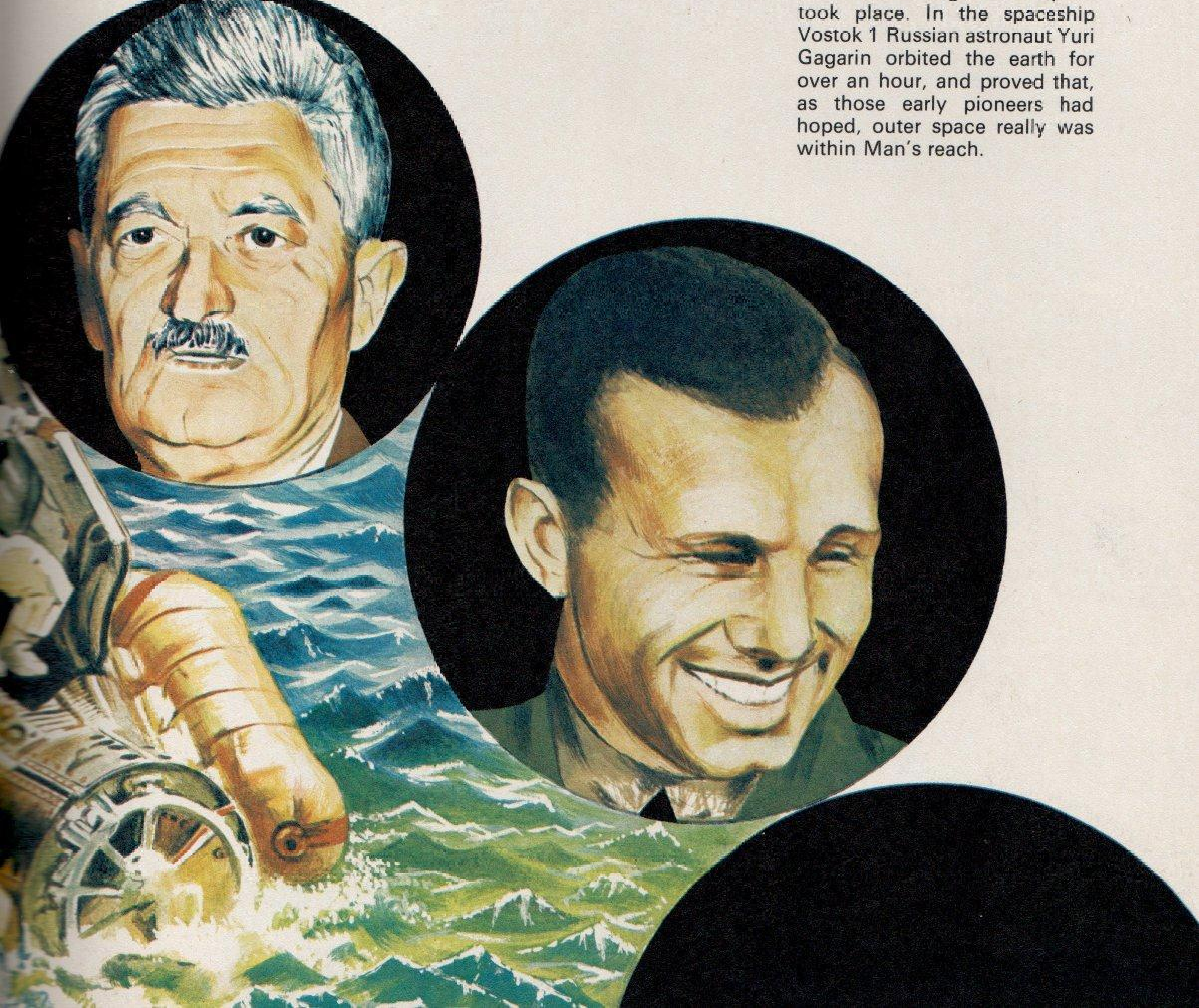
However, it was the Germans who realised the potential of rockets as missiles, and scientists like Hermann Oberth and Wernher von Braun worked throughout the thirties and early forties on these weapons. They included the deadly V.2 guided missile, which could deliver a ton of explosives 200 miles in five minutes.

Nowadays Wernher von Braun is better known for his work on the American space projects, and his aims are a lot more peaceful.

Once the war was over, it was the Russians who took over the development of big rockets, and with the help of German scientists and V.2 rockets to study, they began their space flight programme. Five years later the Americans began a rocket programme too, and developed a range of Inter-Continental Ballistic Missiles. Two of these rockets, the Atlas and Titan, were later used to send the Mercury and Gemini capsules into space, until von Braun developed the huge Saturn V rocket booster, which was able to send the Apollo spacecraft to the moon.

The very first launching into space came in October 1957, when the Russians sent the world's first satellite Sputnik 1 into orbit. However, although it was now known how to send a craft into space, there were other problems to be solved. Problems of weightlessness, radiation, communication and re-entry; all had to be worked on before a man could safely be sent up, and experimental flights were made with animals before the scientists finally decided that everything would work.

At last, in April 1961, Man's first historic flight into space took place. In the spaceship Vostok 1 Russian astronaut Yuri Gagarin orbited the earth for over an hour, and proved that, as those early pioneers had hoped, outer space really was within Man's reach.



TWINKLE, TWINKLE, Little Satellite!

The world's first artificial satellite, Sputnik 1, was launched by the Russians in 1957, and as well as marking the beginning of the Space Age, this event showed scientists that it was now possible to study the earth from *above*.

Satellites of all shapes and sizes were developed to measure the ultra-violet and X-ray radiation from the sun, the earth's magnetic field, the amount of meteoric dust in space, and to determine the exact shape and size of the earth. With more advanced techniques, instruments have been developed which can measure the amount of heat coming from the earth, and also film the movements of ice, snow and cloud, so that scientists are able to make more accurate weather forecasts.

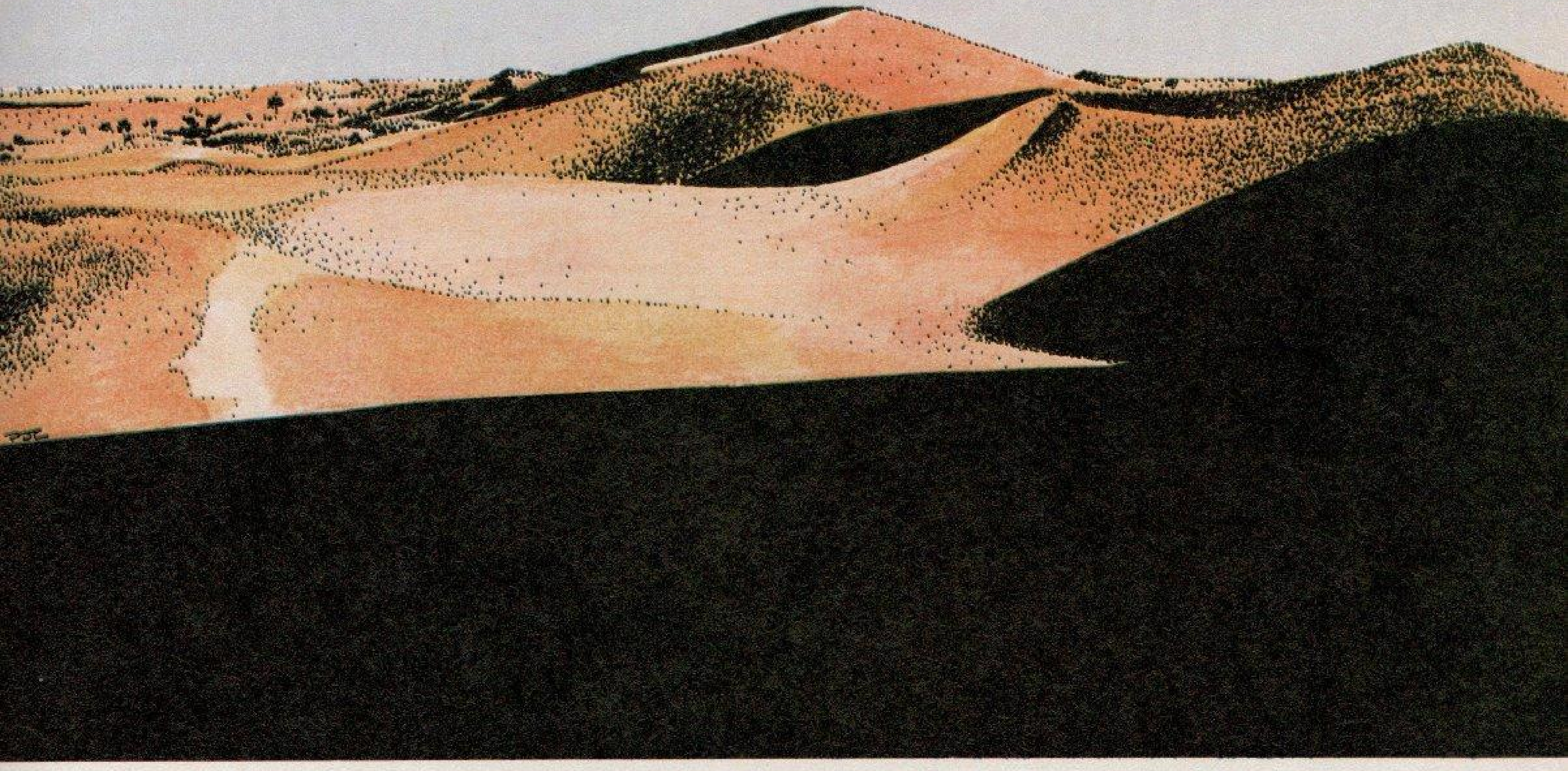
Other satellites act as reflectors, receiving signals from stations on one side of the earth, and bouncing them back down to places thousands of miles away. In this way we are able to see live T.V. transmissions from America and Europe, and send telephone and radio messages all round the world.

The military organisations are obviously more secretive about their satellites, but they are known to send up 'spy satellites', which can photograph enemy ground forces, and warn against any sudden missile attacks by measuring the heat from the rocket's exhaust.

You might think that as more and more satellites are sent into orbit, there would be a danger of them crashing because of overcrowding, but in fact this doesn't happen because satellites don't last for ever. The life span of a satellite depends on its distance from earth, but in all cases they begin to slow down and gradually get nearer the atmosphere. When this happens, the orbit is said to decay, until finally the satellite enters the earth's atmosphere, and is burnt up by friction with the particles of air as it plunges down.

So next time you look up at the sky smile, because you never know, there might be some camera up there taking *your* picture!

CYCLONE TERROR



"Here we are, Sarah. We've arrived."

Sarah Jane Smith walked over to the viewing screen of the Tardis, and looked out. A barren and desolate scene met her eyes. The earth was dry and grey, there wasn't a flower or a blade of grass to be seen, and the only living vegetation was one or two rather straggly-looking trees, with strange, round leaves.

"Oh yes?" she said, in answer to the Doctor's words. "And just where exactly are we this time, Doctor?"

"Well, according to my calculations we have just landed on the planet Zoto, in the galaxy Zaurus, time year 4000. It's somewhere I've always wanted to visit again. Like a holiday, really."

Sarah looked out again at the bleak picture before them, and thought that personally she might have preferred the countryside of the planet Earth, in the galaxy Milky Way, time year 1977. But since she'd been travelling with the Doctor she'd become used to being whisked off to all sorts of strange places in the Tardis, and she had to admit that it was generally more exciting than a couple of days at the seaside.

"OK then, Doctor, let's get our buckets and spades and begin our holiday, shall we?" she smiled, as the Doctor pressed the button on the Tardis's control panel, which opened the front door onto the world outside.

They stepped out, and looked around them.

The deserted landscape had a strange effect on Sarah, and thoughts of hostile, menacing forces filled her head. She shuddered a little.

"Strange," said the Doctor, "there doesn't seem to be anyone about. I'd have thought we'd have seen the Zotons tending those crops over there."

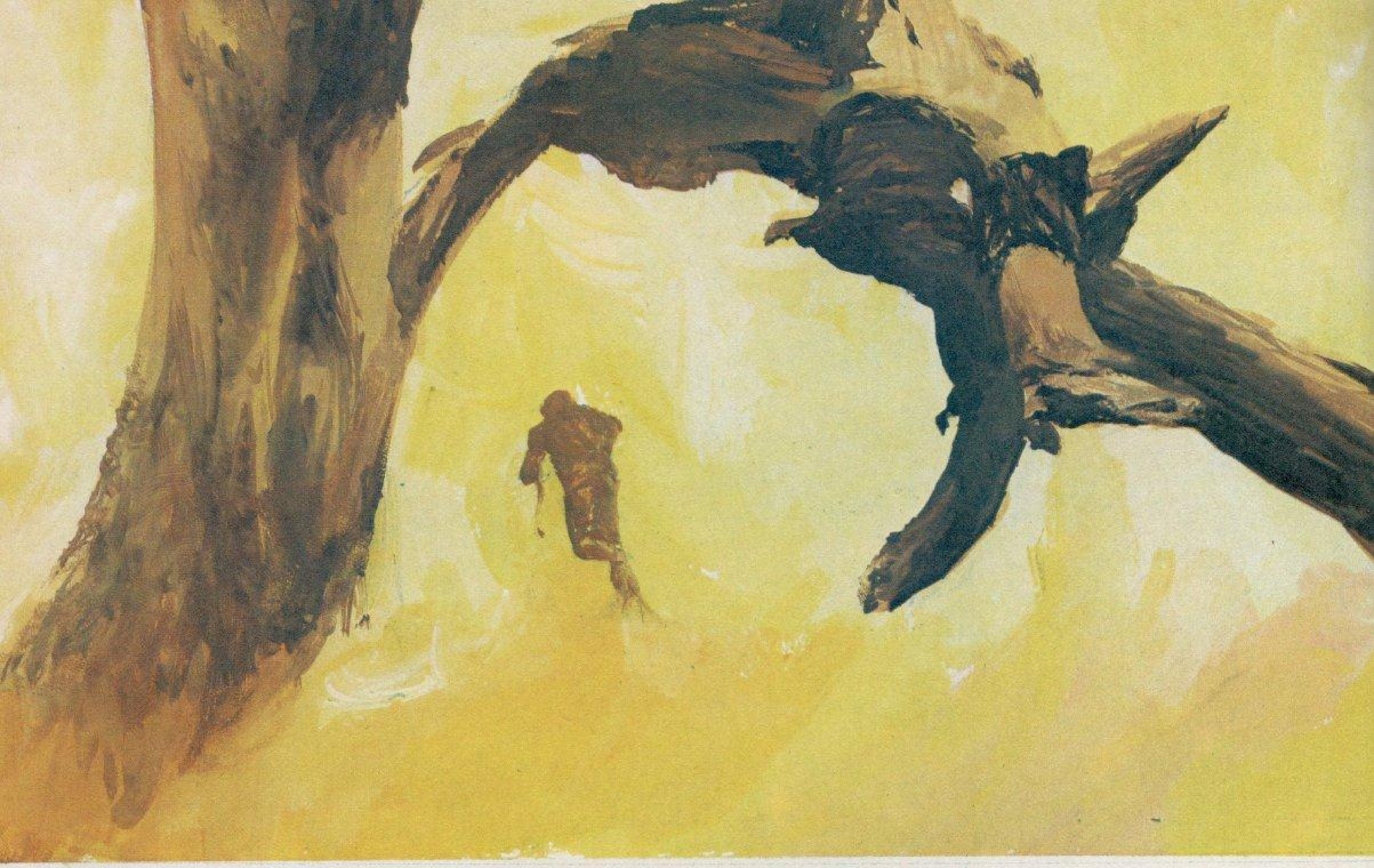
"Crops?" said Sarah. "I can't see any crops."

"Those trees," said the doctor. "They're only found on this planet. Those broad flat leaves are quite tasty, grilled or fried. But I must admit those particular specimens don't look very healthy. I wonder if something's wrong here?"

"Oh yes, Doctor," said Sarah. "I'm sure there is something wrong. Why don't we just go back to . . ."

"AAAAGH!"

Suddenly a blood-chilling yell split the still air of Zoto. It was the cry of a humanoid man—a man who knew that he was in mortal danger. Sarah clutched the Doctor's arm, her face white with fear.



The Doctor was scanning the landscape in the direction from which the cry had come, and as Sarah turned her head to look, they both saw him. The Zoton man ran from behind the trees, stumbling occasionally in his headlong flight, making, as they could now see, for a deep pit dug into the ground.

"It's coming!" he yelled as he ran. "I can feel it coming! The pit! I must reach the pit!"

"Doctor! We must hide somewhere!" cried Sarah. "Whatever it is that's coming it's terrified that poor man."

"I think," said the Doctor quietly, as he felt a strong breeze ruffling his hair, and turned to look again in the direction of the trees, "that it may already be too late for that. Look!"

The Doctor pointed to a huge dust cloud which was advancing towards them at a tremendous speed. Even before Sarah could speak it was upon them, swept along by the power of a terrible, ravaging wind. A cyclone had hit the desolate landscape.

Sarah and the doctor clung together as the force of the wind hit them and lifted them off their feet. The Doctor's scarf trailed behind them as they were whirled and swirled along at a terrifying speed.

And then, as suddenly as it had started, the wind dropped. They fell to the ground, exhausted and breathless.

"Are you all right, Sarah?" asked the Doctor.

"No bones broken, Doctor. But I can't exactly say I enjoyed that little trip. Does that happen often on Zoto?"

"It shouldn't happen at all, Sarah," replied the Doctor. "Most unusual. Zoto has a similar climate to that of Earth, but much more temperate. This is all quite fascinating."

"*Hmmm,*" said Sarah, "that's one word for it, I suppose. I wonder how many miles we've come?"

"About five or six, I should think," said the Doctor. "Shouldn't take us more than an hour or so to walk back. It's a good thing I left the Tardis on automatic Time-Space Lock, or else we might have lost her in that little breeze."

Sarah felt almost ready to drop by the time they reached the Tardis once more. But their adventure wasn't over yet.

The Tardis was surrounded by a group of Zotons, who were staring at it in fascination. Their clothes were ragged and torn, and they looked wild-eyed, as though there was some great fear in their lives from which they could not escape.

Sarah gasped as she saw them clustering round the Tardis, but the Doctor reassured her: "Don't worry, Sarah, they're good people. They won't harm us."

Just then one of the Zoton men noticed them approaching, and ran forward. "Greetings, Doctor!" he cried. "You are most welcome here!"

"How does he know you?" whispered Sarah.

"Many are the tales my people have told about the brave and good Doctor," smiled the Zoton, who had heard her whisper. "You helped us greatly the last time you were here, many hundreds of years ago. We always believed that one day you would return. Would that you could help us once more."

"I'm very pleased to be back here again," said the Doctor. "This has always been one of my favourite planets. But what is it that has made your people so afraid?"

"It began some months ago," said the Zoton. "Terrible cyclones began to ravage our land. No one knows why they began, and no one knows if ever they will stop. But each one that comes brings new destruction. And our crops cannot survive against them. We have had to dig deep pits in which our people can take shelter."

"I see," said the Doctor. "Now, tell me what you have noticed about these cyclones. Have you calculated velocity, direction, and so on?"

"Yes," said the Zoton. "And it is very strange. Each cyclone is exactly the same velocity, and comes from exactly the same direction."

"Not strange at all," said the Doctor. "It's more or less what I expected. Now then, point out the direction from which the cyclones come, and Sarah and I will go and investigate."

"They come from the south, Doctor, from behind the trees," said the Zoton, looking puzzled. "But how can you investigate?"

"Won't be long, my good fellow. Come along, Sarah."

"What . . .? Where are we going?" asked Sarah, running to keep up with the Doctor as he set off through the fields.

"Now, Sarah, I want you to be very quiet, and when I say the word I want you to take cover quickly."

They walked on in silence for some minutes, until the Doctor took Sarah's arm, put his finger to his lips, and said, "Take cover, Sarah, behind those rocks."

Sarah hid obediently, with not the slightest idea of what was going on, and the Doctor peered over the top of the rocks.

"Just as I thought," he said. "Take a look, Sarah."

Sarah looked out over the top of the rocks, and a strange sight met her eyes. Not far away, twenty or thirty reptilian creatures were working on a huge machine, like a vastly powerful fan.

"Who are they, Doctor?" asked Sarah.

"Zanons. From another planet in this galaxy. I have come up against them before. They have a compelling desire for power, but also a horror of weapons and combat. They are well-known for the many ingenious ways they find of taking over new lands. And this is one of them."

"I don't understand," said Sarah.

"That machine," explained the Doctor, "is a wind machine. That's what's responsible for the cyclones. The Zanons are trying to overcome the people of Zoto by weakening them, through fear, and also through hunger, because

their crops are being destroyed."

"I see," said Sarah. "But what can we do?"

"As I told you," said the Doctor, "the Zanons have a terror of weapons. Pass me that dead bough over there, and I'll see if a spot of whittling can make a harmless piece of wood into a fearful ray gun."

The Doctor worked hard for many minutes, carving away at the wood until he had made what was, indeed, a fair replica of a ray gun.

"The rest," he said to Sarah, "should be easy."

Sarah held her breath as the Doctor stood up and marched boldly forward into the group of Zanons. She watched as their cold glassy eyes looked into his. It wasn't going to work. The Doctor would be captured. She had to do something. . . .

She ran through the rocks, summoned up all her courage, and in one flying leap she landed on the back of one of the Zanons. As she felt its scaly skin beneath her hands she almost fainted with fear, but she managed to hold on. And though she could hardly believe it, her plan worked in seconds.

The shrieks of the Zanon alerted all the others, and being attacked from the front and the rear at once was just too much for them. Though they outnumbered the Doctor and Sarah by more than ten to one, they were just too afraid of fighting to retaliate. They fled through the trees, uttering strange cries of great fear.

Sarah heaved a sigh of heartfelt relief, and sat down on the nearest rock. But the Doctor was still busy. He had manhandled the wind machine so that it now faced in the direction of the fleeing Zanons, and now he was searching frantically for the switch or lever which would start it.

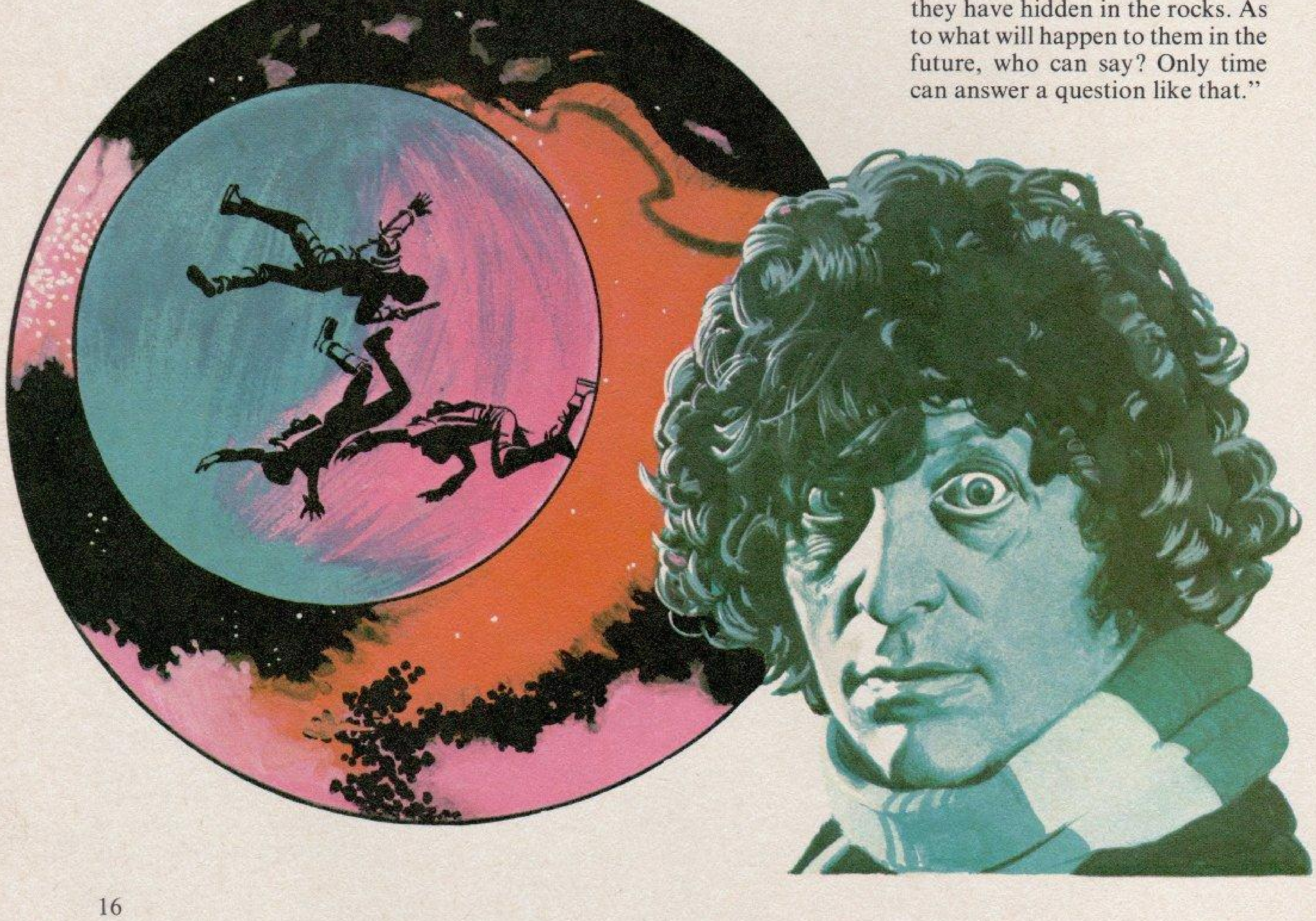
Within seconds he had found it, and the recoil knocked him off his feet as a tremendous blast of air shot out from the machine, sweeping along everything in its path.

Sarah could see the Zanons being hurled along, powerless to resist the force of their own invention.

Some minutes later the Doctor switched off the machine, and they walked slowly back to tell the Zoton people that their cyclone terror was now over once and for all.

"But what happened to the Zanons, Doctor?" asked the Zoton man. "Did they perish? All of them?"

"If any of them survived," replied the Doctor, "they will head back to their own planet at the greatest speed they can muster, in whatever manner of spacecraft they have hidden in the rocks. As to what will happen to them in the future, who can say? Only time can answer a question like that."



The Airship rises to fame.

Supersonic jumbo jet air travel is progressing every year—and police boxes are doing well, too! So you may be surprised that there is a possibility of a comeback for—the airship.

Goodyear, for instance, who made hundreds of the airships of years ago, are hoping that their new models will be widely used in aerial photography and publicity campaigns. And there is a new cargo-carrying airship, called Skyship.

But as always, in the stormy career of the airship, there are problems to be overcome.

The rise of the airship never could be called plain sailing. . . .

THROW EVERYTHING OUT!

The immediate forerunner of the airship was of course the balloon, and it was way back in 1784 when the first balloon rose into the sky, crewed by the Montgolfier brothers.

That first short flight captured the imagination of the world, and ballooning became the big news of the day. The following year, in January, Jean Pierre Blanchard and John Jeffries set off from Dover, in the first-ever attempt to cross the channel by balloon.

Their craft must have seemed ultra-modern indeed to the crowds who gathered to see them off, with its valve to control the amount of hydrogen, its ballast bags, barometer, and its four 'rudders' and tail fin.

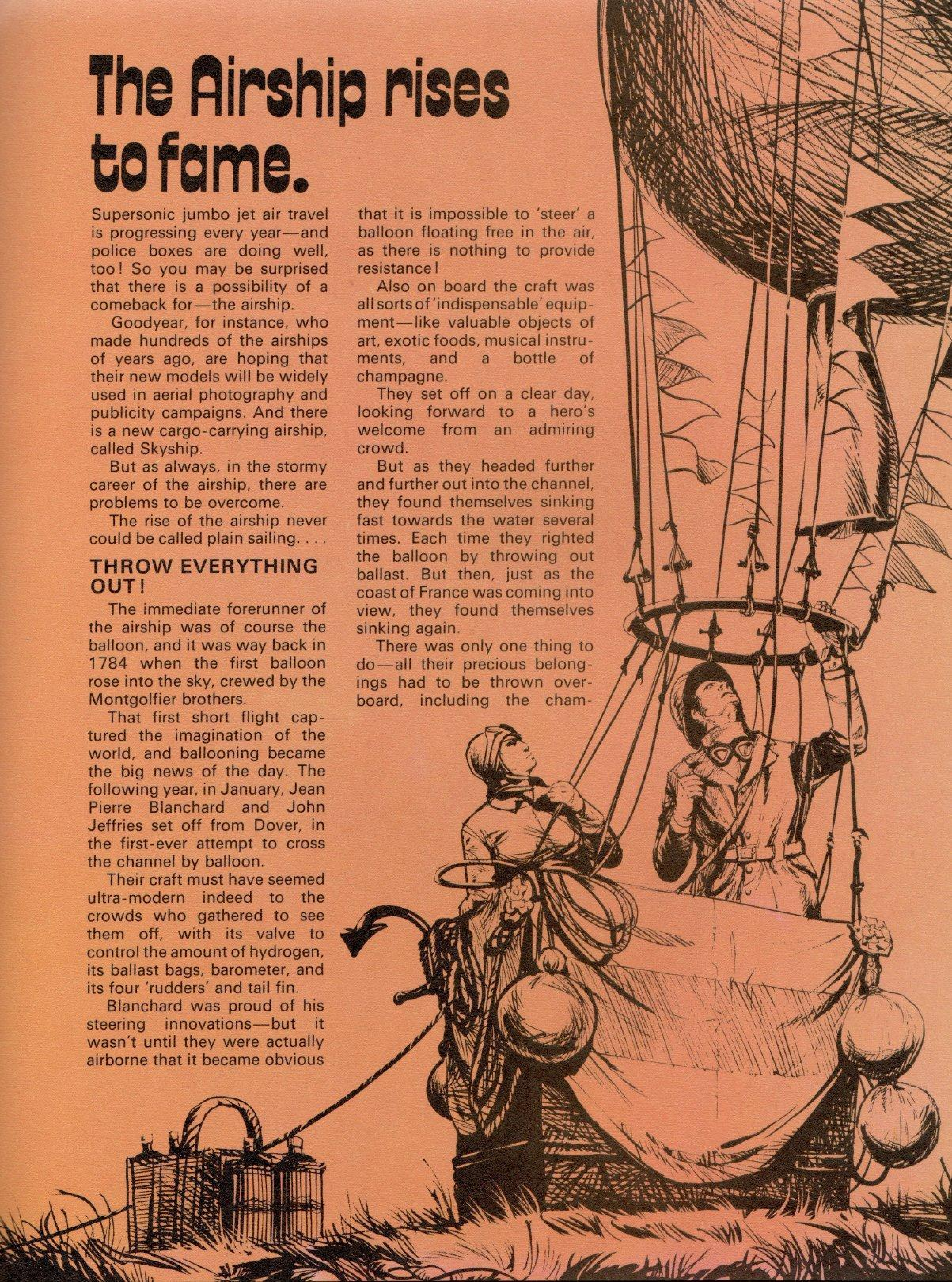
Blanchard was proud of his steering innovations—but it wasn't until they were actually airborne that it became obvious that it is impossible to 'steer' a balloon floating free in the air, as there is nothing to provide resistance!

Also on board the craft was all sorts of 'indispensable' equipment—like valuable objects of art, exotic foods, musical instruments, and a bottle of champagne.

They set off on a clear day, looking forward to a hero's welcome from an admiring crowd.

But as they headed further and further out into the channel, they found themselves sinking fast towards the water several times. Each time they righted the balloon by throwing out ballast. But then, just as the coast of France was coming into view, they found themselves sinking again.

There was only one thing to do—all their precious belongings had to be thrown overboard, including the cham-



pagne. But still they were sinking. . . .

Blanchard did not hesitate—he threw all his clothes into the water below. Jeffries, however, thought that that was going just a bit too far, and could only be persuaded to throw out his boots.

And at last the balloon rose.

An hour later, the balloon landed in France—but there were no admiring crowds in the small wood where it eventually came to rest!

Blanchard and Jeffries got their reception later, in Calais, and they also earned their place in the history books of the world. The way was open for the progress of the balloon, and for the coming of the airship.

TRIUMPH FOR SANTOS-DUMONT

It soon became clear that it was vital to the success of balloons that a way should be found to steer them. And it was Henri Giffard who finally accomplished that in 1852, when he flew a cigar-shaped balloon powered by a three horsepower steam engine, which drove a propeller.

In France, the leading airship designer was Alberto Santos-Dumont, and in the last years of the 19th century he built several non-rigid dirigibles (in which the balloon has no fixed framework), powered by petrol engines.

Dirigible was the word which came to be used for balloons which could be steered.

In 1900 a member of the French Aero Club offered a cash prize to the first aviator to fly from the Club to the Eiffel Tower, and back again, in half an hour.

Santos-Dumont twice tried unsuccessfully, but it was a case of third time lucky.

At his third attempt, despite engine trouble, and despite a guide rope catching for a while on a roof top, Santos-Dumont was back at the club in about 29 minutes.

He crossed the finishing line, but the balloon was floating high, and its mooring ropes were not anchored for another couple of minutes.

And the Aero Club refused to give the prize.

Some weeks later they reversed their decision, and conceded that the brilliant aviator deserved the prize money. Santos-Dumont distributed it among the poor of Paris, and resigned from the club in protest at its original decision.

Santos-Dumont was one of the great pioneers of the airship, and he found that his dirigible was very suitable for all short trips. He would moor it outside his house and take pleasure cruises around the city of Paris!

A DARING ATTEMPT

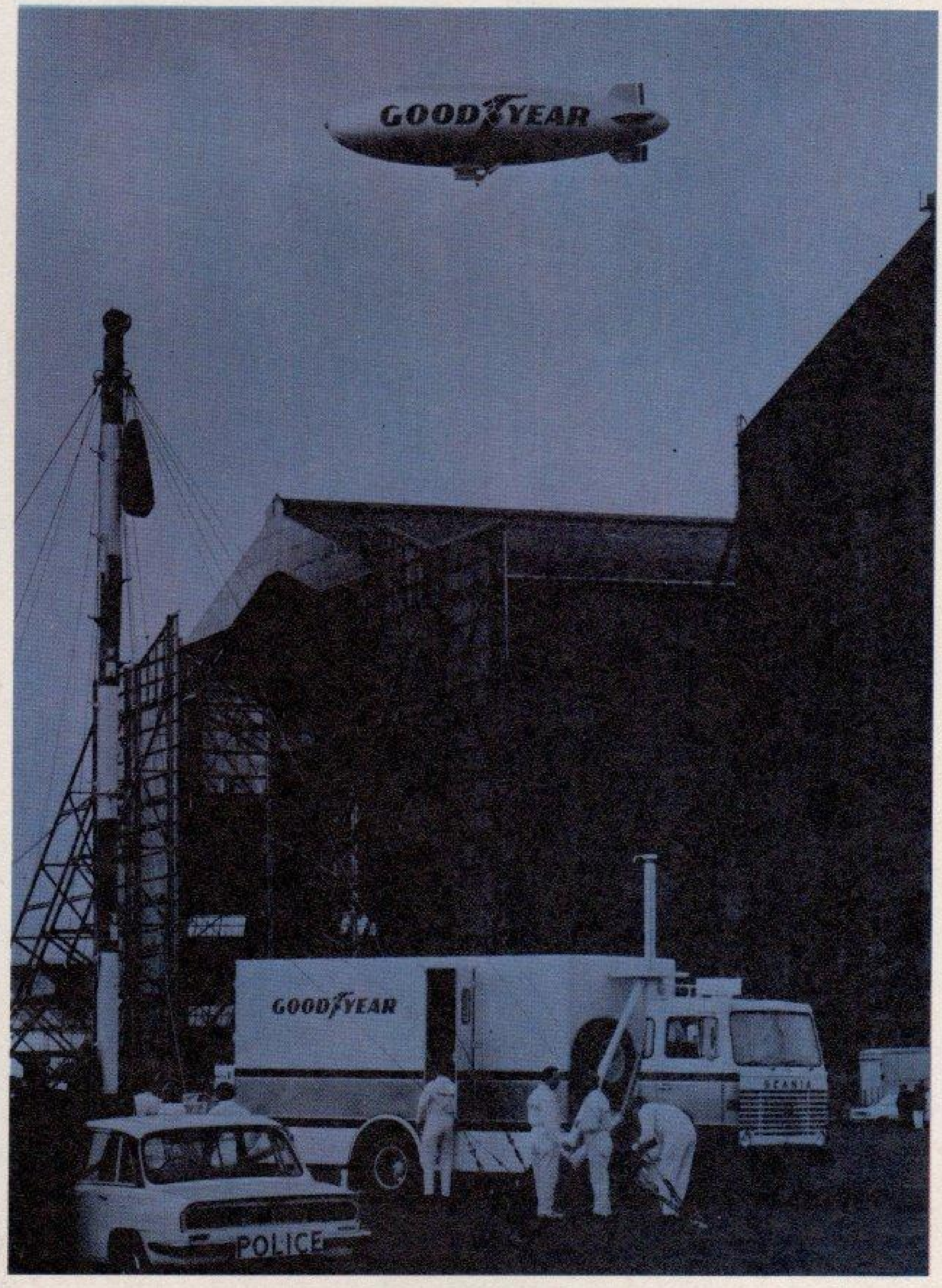
In Germany Count von Zeppelin was developing the airships which were to take his company to worldwide fame, and in America the adventurous Walter Wellman was preparing to cross the Atlantic in an airship!

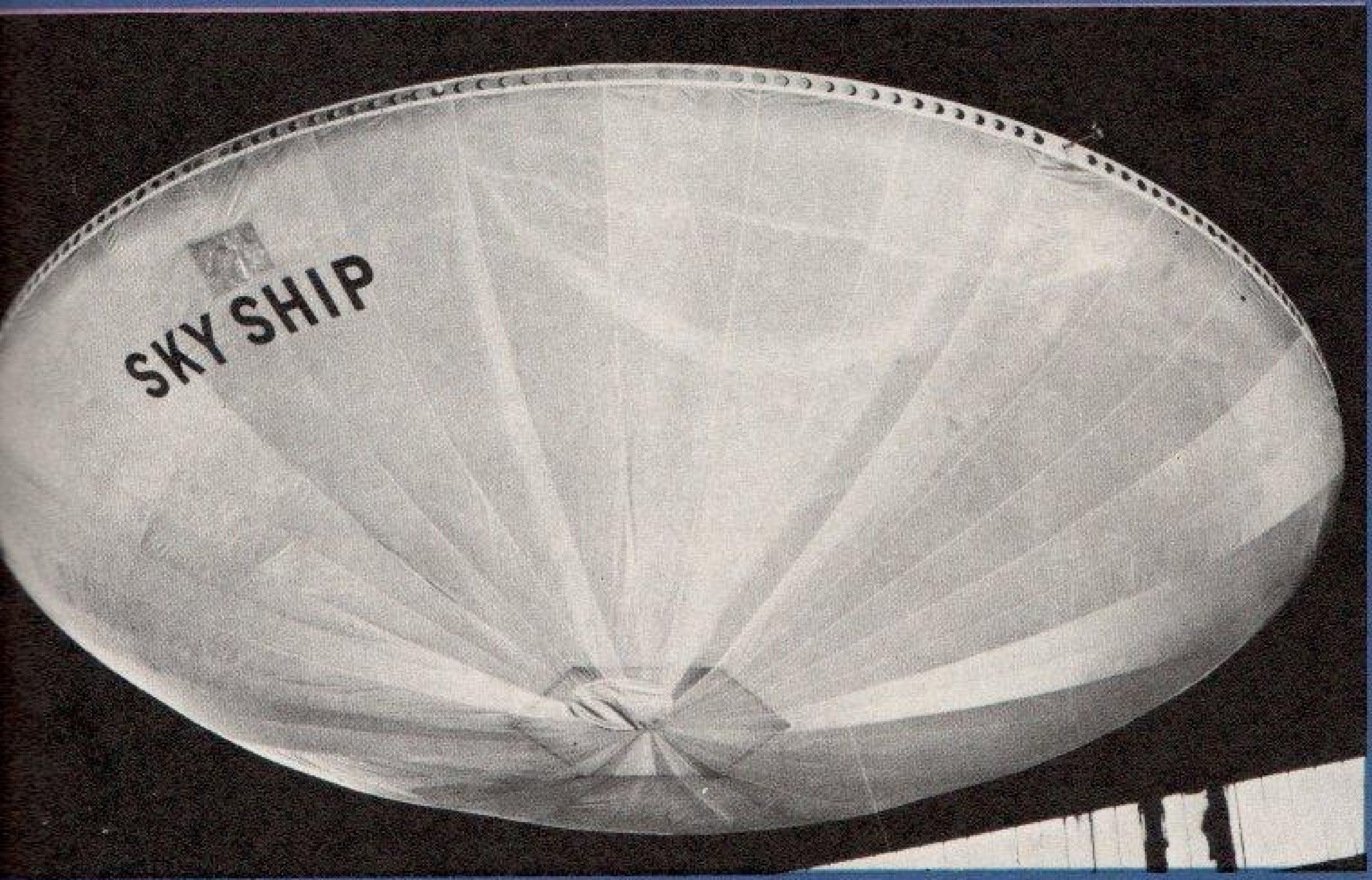
This was indeed an exciting venture, and it held the attention of the world.

The crew consisted of five men, and one black cat, and if they took the cat along for luck they were sadly disappointed! The cat hated flying, and became so bad-tempered that it was a great nuisance to them.

Wellman's design for the airship included a feature which he thought would prove invaluably efficient. It was a steel rope with wood blocks, which was intended to act as a kind of guide rope, keeping the airship at any height required. Wellman called his invention an *equilibrator.*

In full flight.





The latest in cargo-carrying airships. Looks like everyone's idea of a flying saucer, doesn't it?

The *America* set off in October 1910, on what was effectively its first test flight, as Wellman had not even made a short trial run before the Atlantic attempt.

Sadly, the *America* ran into all sorts of difficulties. When the hot sun caused the gas in the balloon to expand, the balloon rose, and the equilibrator simply rose with it, swinging about in mid air beneath the balloon. There was thick fog at times, and once the balloon sank so low that it almost collided with a boat.

At last the crew had had enough. They saw a steamer, the *Trent*, and signalled for her to come to their aid. The *Trent* drew close to the airship, and the *America* crew managed to crawl aboard a lifeboat.

The black cat *and* the equilibrator did not redeem their records during the rescue—they both lashed about fiercely, and the equilibrator even injured two of the crew.

Wellman's daring attempt had failed. But he too deserves his place in the aviation history books. He had stayed airborne for 71 hours, and had travelled 1,008 miles—breaking all records.

THE AIRSHIP'S VARIED CAREER

Airships progressed in all directions all over the world, notably those made by the famous German company, Zeppelin. These were used in the first and second world wars for bombing and reconnaissance work. Zeppelin raids in the night sky struck fear into the hearts of hundreds of people in British towns and cities.

Also used for reconnaissance were small non-rigid dirigibles, called blimps. These escorted many hundreds of Allied convoys of ships, to protect them from submarine attack. The blimps could spot a submarine long before the surface vessels could, and they carried bombs.

Their success in World War Two was exceptional. Fourteen Allied blimp squadrons escorted 89,000 surface vessels, without a single vessel being lost to enemy action.

Of course, airships were progressing in commercial duties also.

The famous *Graf Zeppelin* had fantastic success in its passenger service across the Atlantic. The airship was like a five-star hotel, with sleeping accommodation, comfortable lounges, and dining rooms serving a choice of gourmet dishes.

One of the greatest advantages about this kind of travel, of course, was that it was an incredibly smooth journey, with the airship seeming just to float in the air.

Between 1928 and 1937 the *Graf Zeppelin* operated a regular ocean crossing service, safely carrying 13,100 passengers, and thus earning its record as one of the greatest airships of all time.

The *Graf Zeppelin*'s successor on the New York run never had a chance to compete with the success of her sister ship. This was the ill-fated *Hindenburg*, which was even more luxurious, and was described as 'the luxury queen of the skies'.

Alas, the *Hindenburg* met a sad and tragic end after only a few months of service, which is recorded forever on a famous piece of newsreel film. The public's confidence in the airship suffered a great blow.

The dirigible passed out of common use with the arrival of jet propulsion and supersonic travel. But who knows? If the new craft are successful, airships may again capture the attention of the world, and we may see them again, floating through our skies.

SPACE HAS A WORD FOR IT!

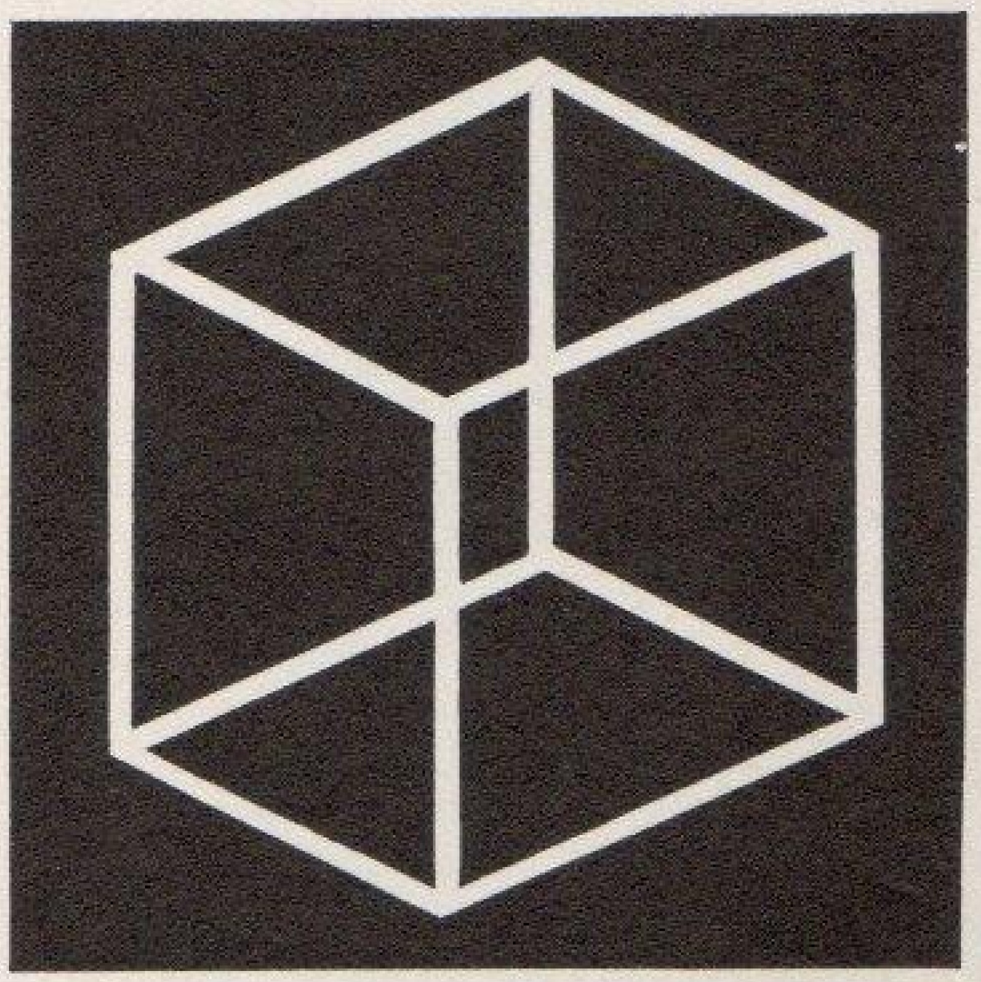
Several words in space terminology are actually shortened versions for a piece of equipment or an organisation, or even certain conditions in space. Do you know:

1. What does MOOSE stand for?
2. What is the more common name of EVLSS?
3. What is a LEM?
4. What is ALSEP?
5. What is CAT?
6. What does NASA stand for?
7. What is APT?
8. What was TIROS 1?
9. What is IAF?
10. What is ELDO?

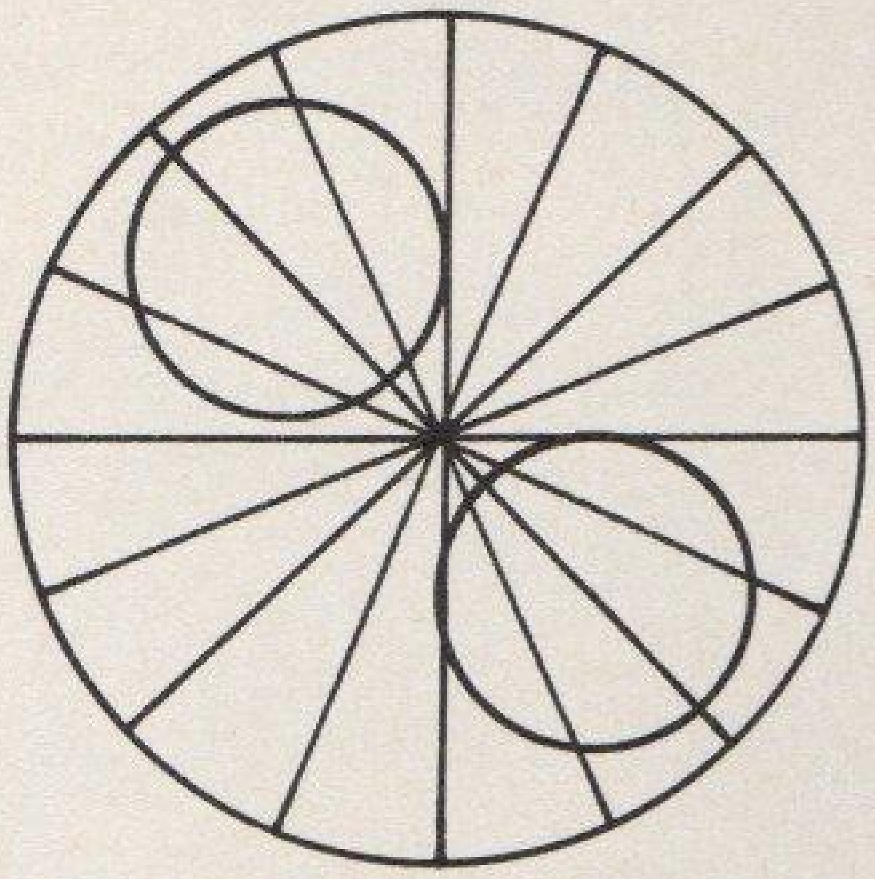
Check your answers on page 76

More to it than meets the eye

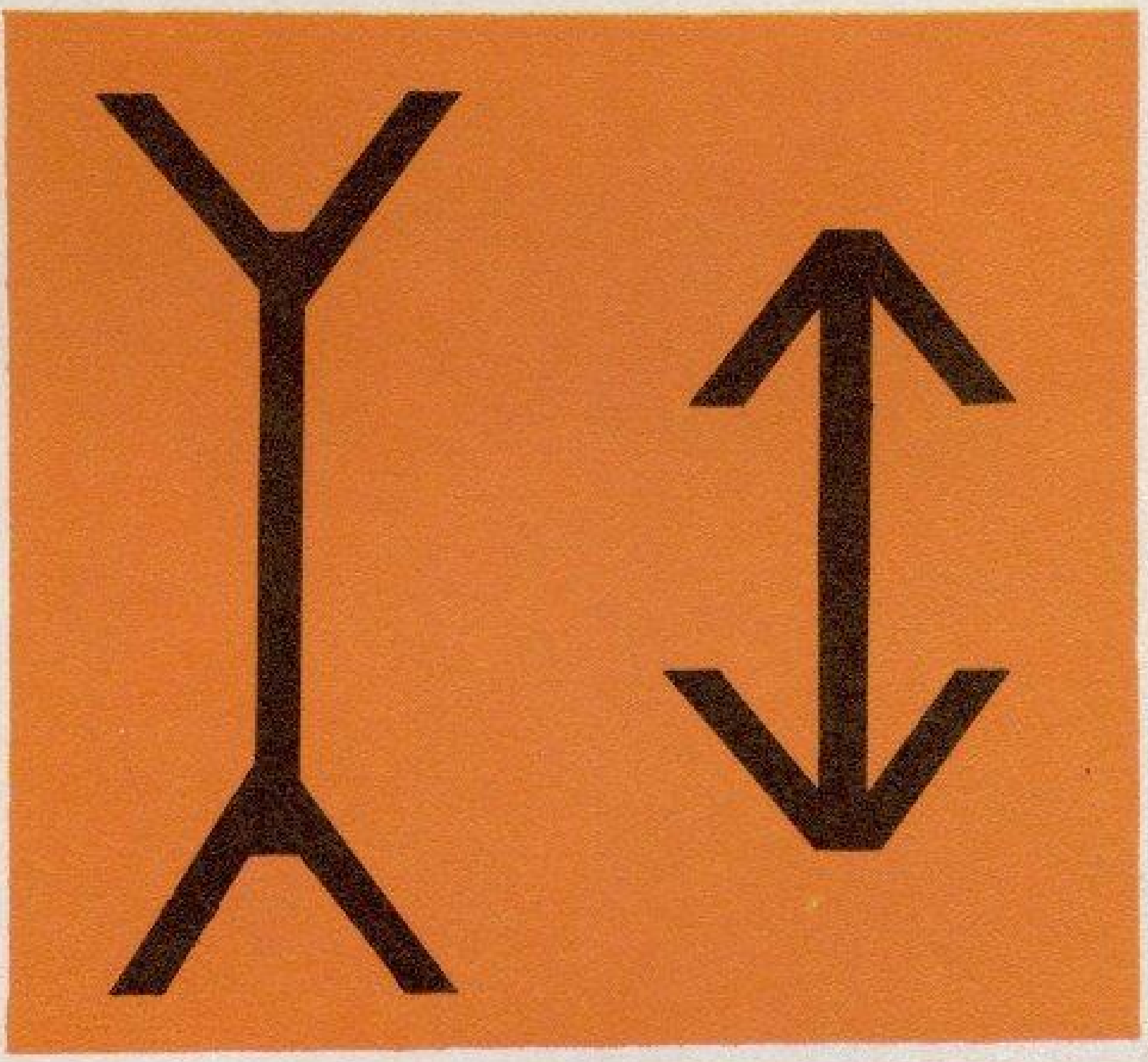
In the vast darkness of outer space, astronauts of the future may well find that their eyes are playing tricks on them. Without the familiar surroundings of earth, the senses become confused, and as the optical illusions shown below indicate, objects in space may not be quite as they appear!



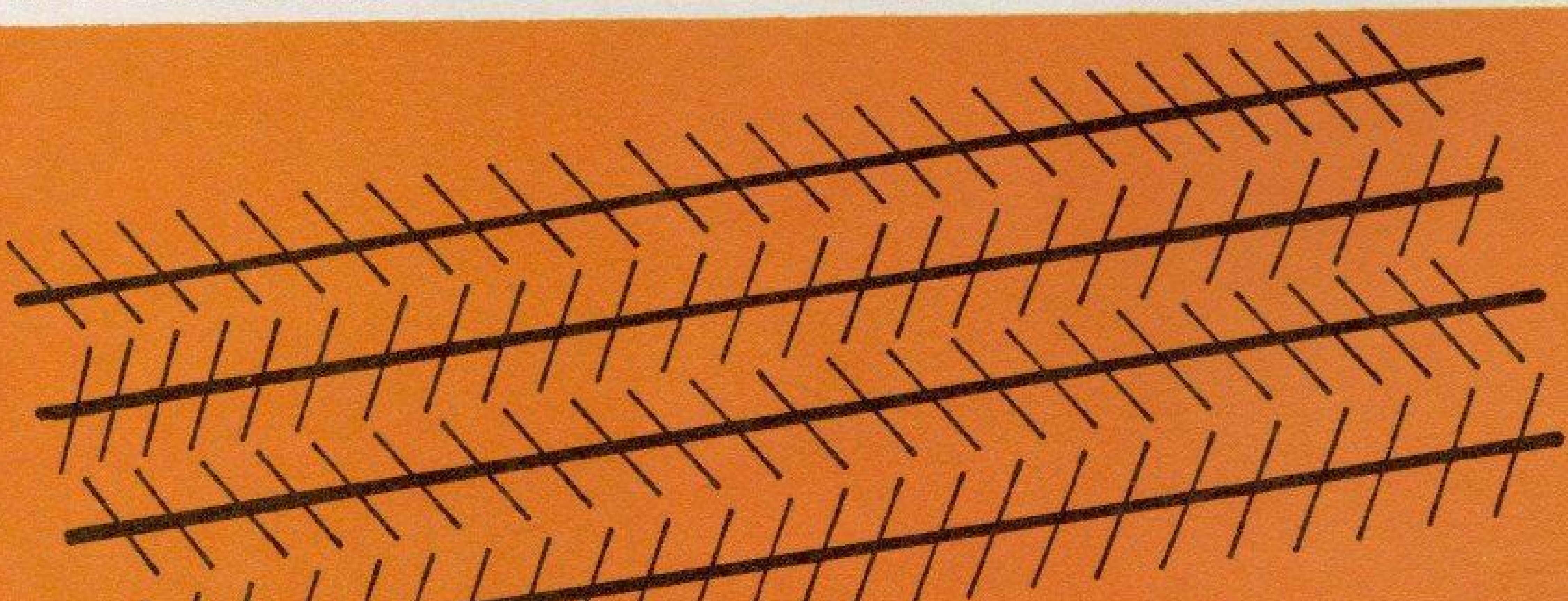
The Necker cube is a good example of this. Imagine that the black background is in fact outer space, and try to decide if you are looking at the cube from above or below. You will find that you can see it from both angles, and because there is no shading or perspective to help you, it is impossible to say which position is the right one. The problems facing astronauts will be very similar.



Here is another puzzle. Can you say how many true circles there are here?



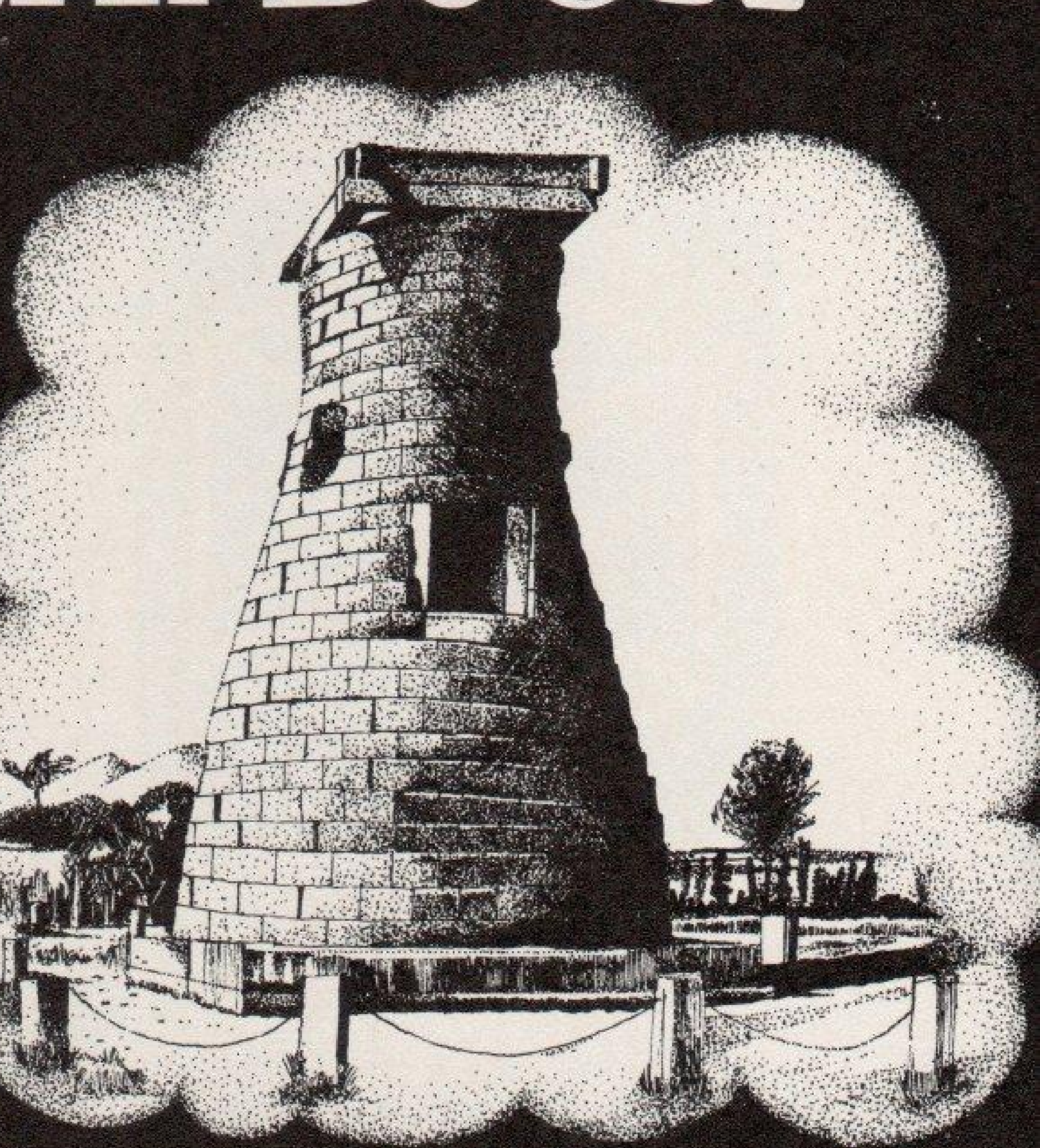
Or how about this one? Which of these vertical lines is the longer?



This herringbone pattern is probably familiar to you, but look at it closely. Are the lines parallel?

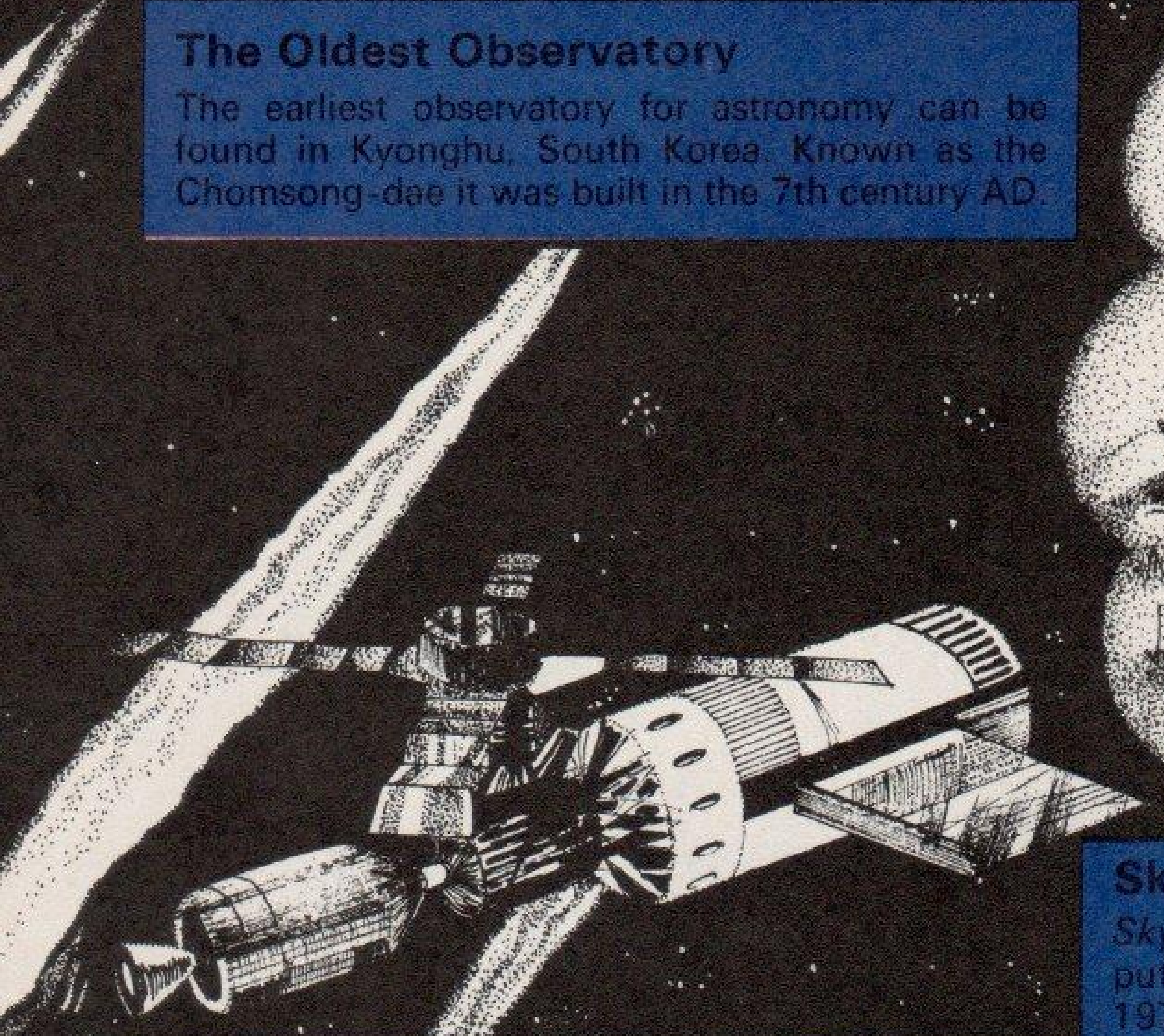
Check your answers on page 76

SPACE SCRAPBOOK



The Oldest Observatory

The earliest observatory for astronomy can be found in Kyonghu, South Korea. Known as the Chomsong-dae it was built in the 7th century AD.



Skylab 1

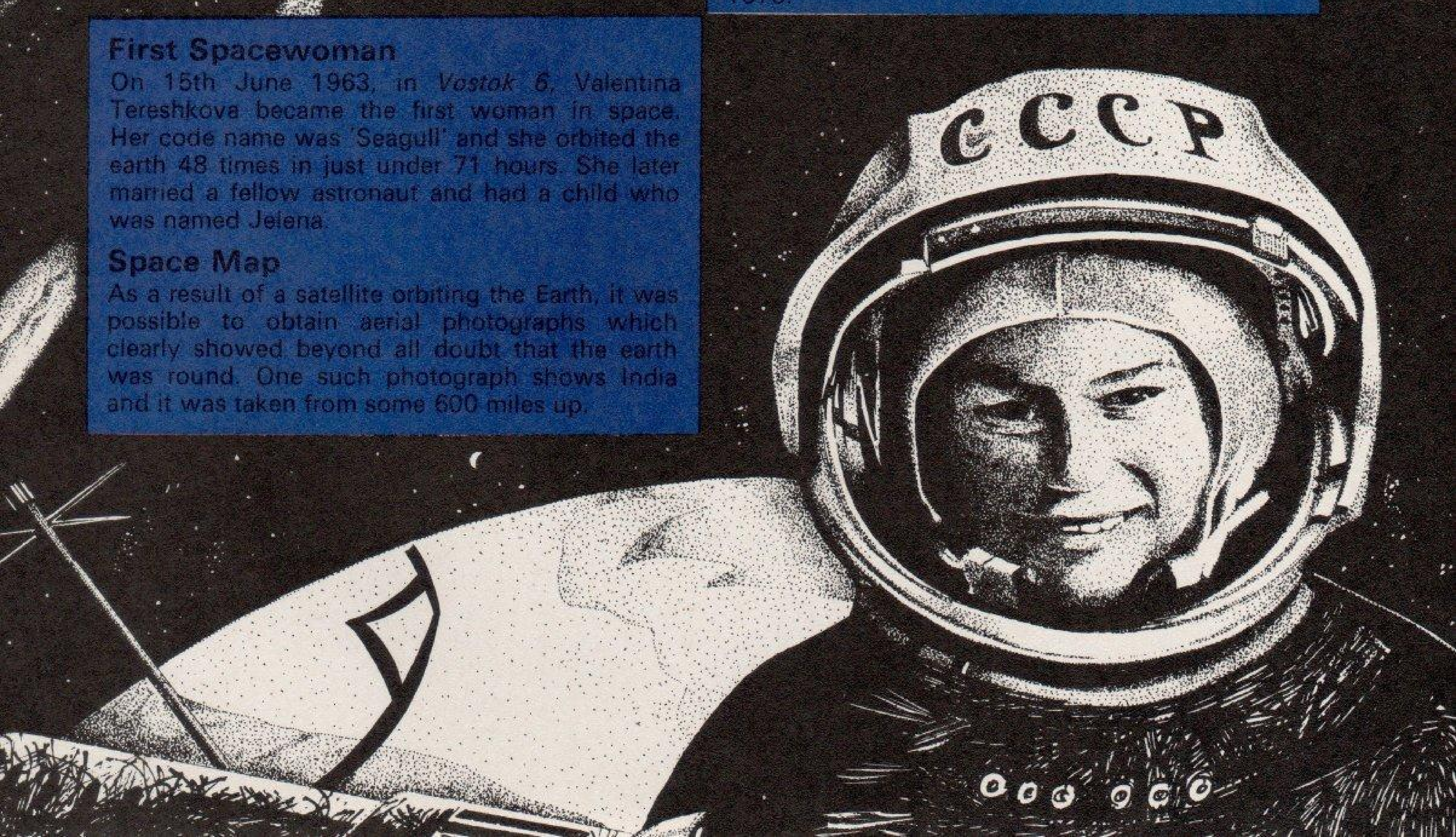
Skylab 1 was the heaviest and largest object ever put into Earth orbit. It was launched on 14th May 1973.

First Spacewoman

On 15th June 1963, in *Vostok 6,* Valentina Tereshkova became the first woman in space. Her code name was 'Seagull' and she orbited the earth 48 times in just under 71 hours. She later married a fellow astronaut and had a child who was named Jelena.

Space Map

As a result of a satellite orbiting the Earth, it was possible to obtain aerial photographs which clearly showed beyond all doubt that the earth was round. One such photograph shows India and it was taken from some 600 miles up.



ASTRONAUTS SPELL SPACE

It is now some twenty years since Yuri Gagarin became the first man in space, and over the years others have followed him, each contributing in some way to man's conquest of space.

S is for Alan Shepard

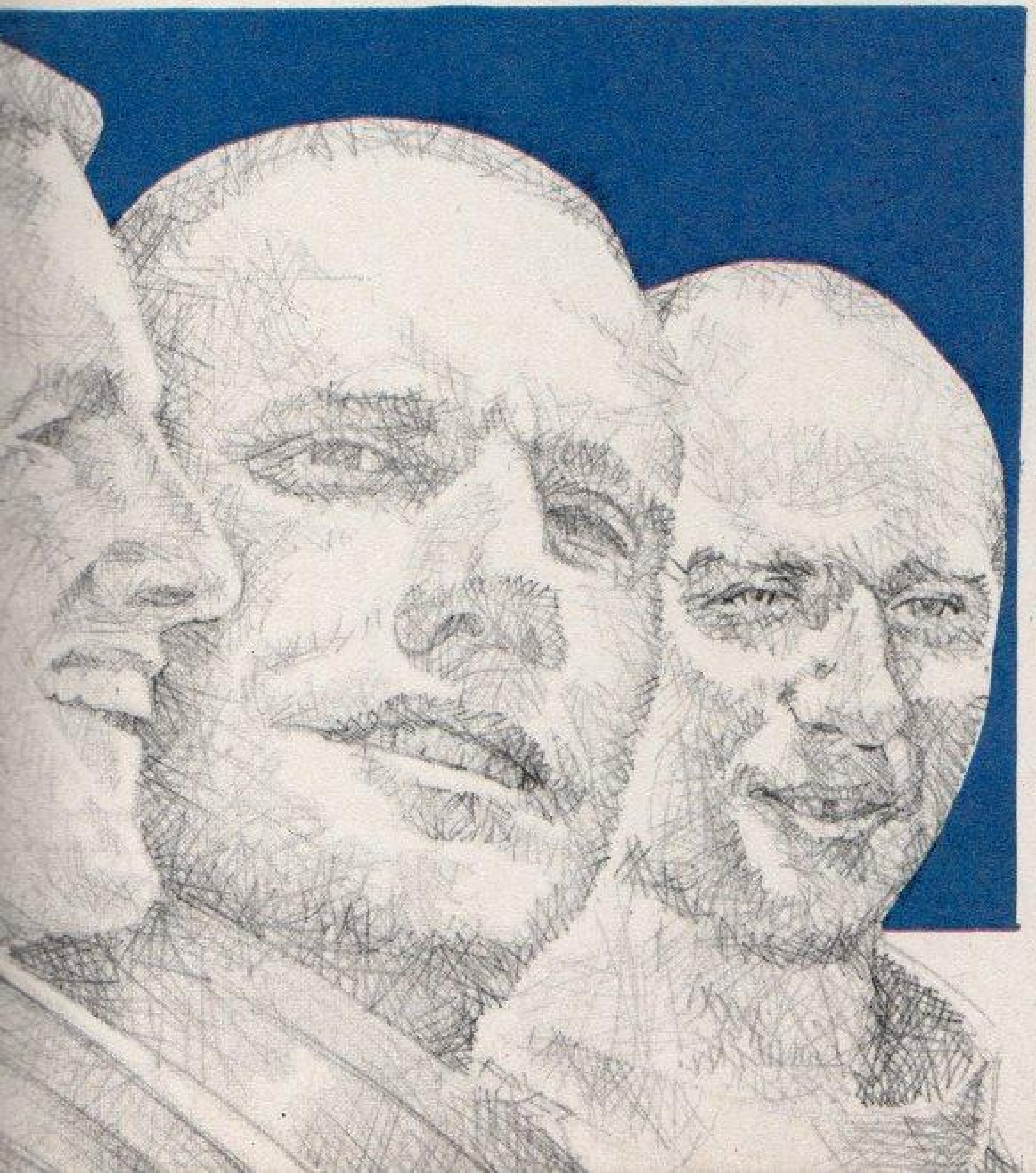
On May 5th 1961, in a sub-orbital test, Alan Shepard became the first American in space. In a capsule weighing around 2,800 lbs Shepard attained a speed of over 5,000 miles per hour, reached an altitude of over 116 miles and returned about 300 miles down range.

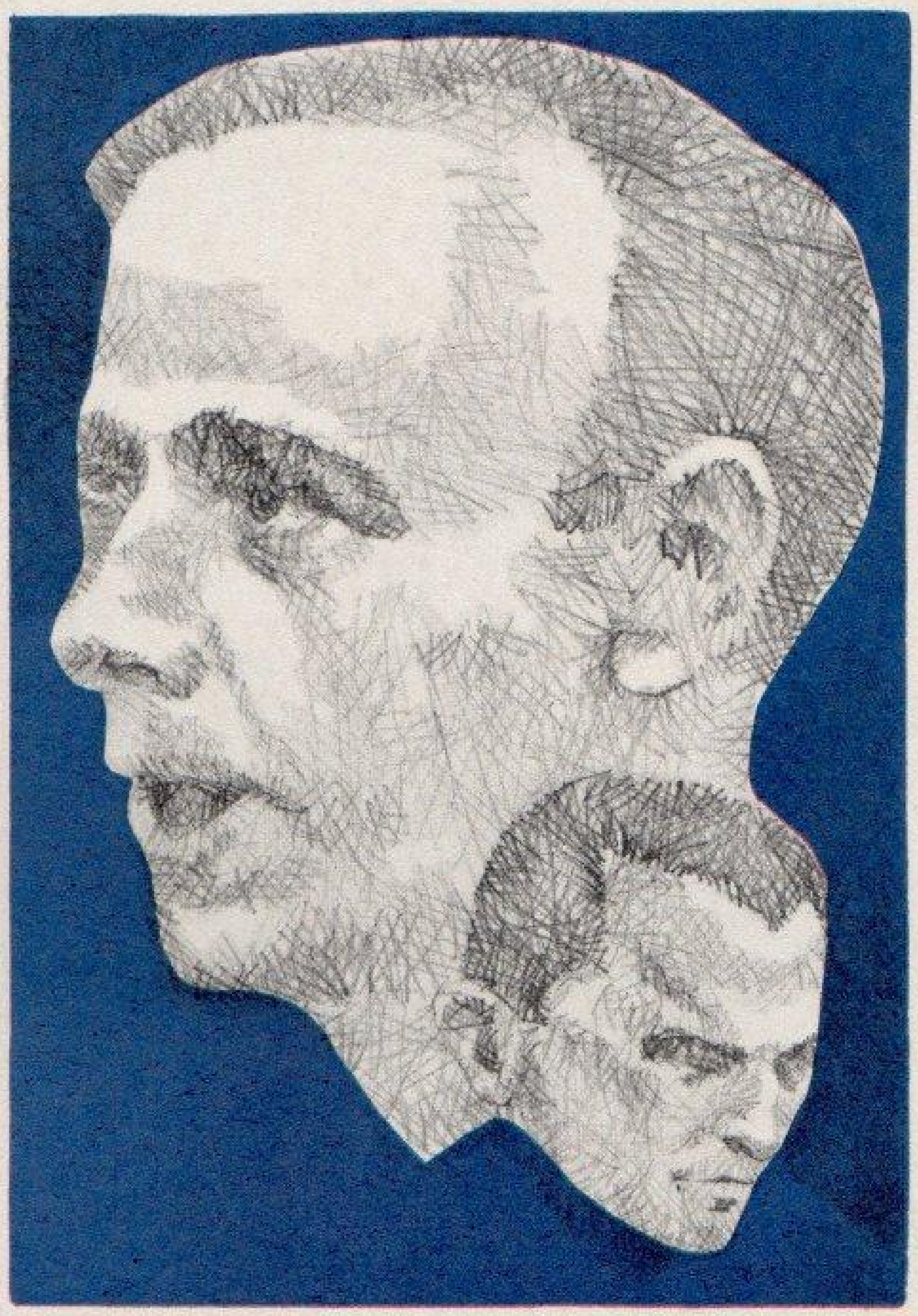
P is for Project Gemini

Several American astronauts took part in the Project Gemini space programme. They included John Young, who with Virgil Grissom manned the first Gemini flight in March 1965, and Pete Conrad and Dick Gordon, the crew of *Gemini-11*, who became the first men at their record height to see a huge shining ball in space. It was the whole earth seen for the first time in space!

A is for Neil Armstrong

Neil Armstrong will go down in space history as the first man to set foot on the moon. In *Apollo-XI*, with Aldrin and Collins, Armstrong orbited in space and landed on the moon on the 20th July 1969, taking one short step himself, but a great one for mankind. Aldrin followed almost twenty minutes later and together they set up a TV camera to record their activities back on earth. They obtained soil samples—moon dust—and returned safely to LM *Eagle*, another great 'first' in space.





C is for Conrad and Cernan

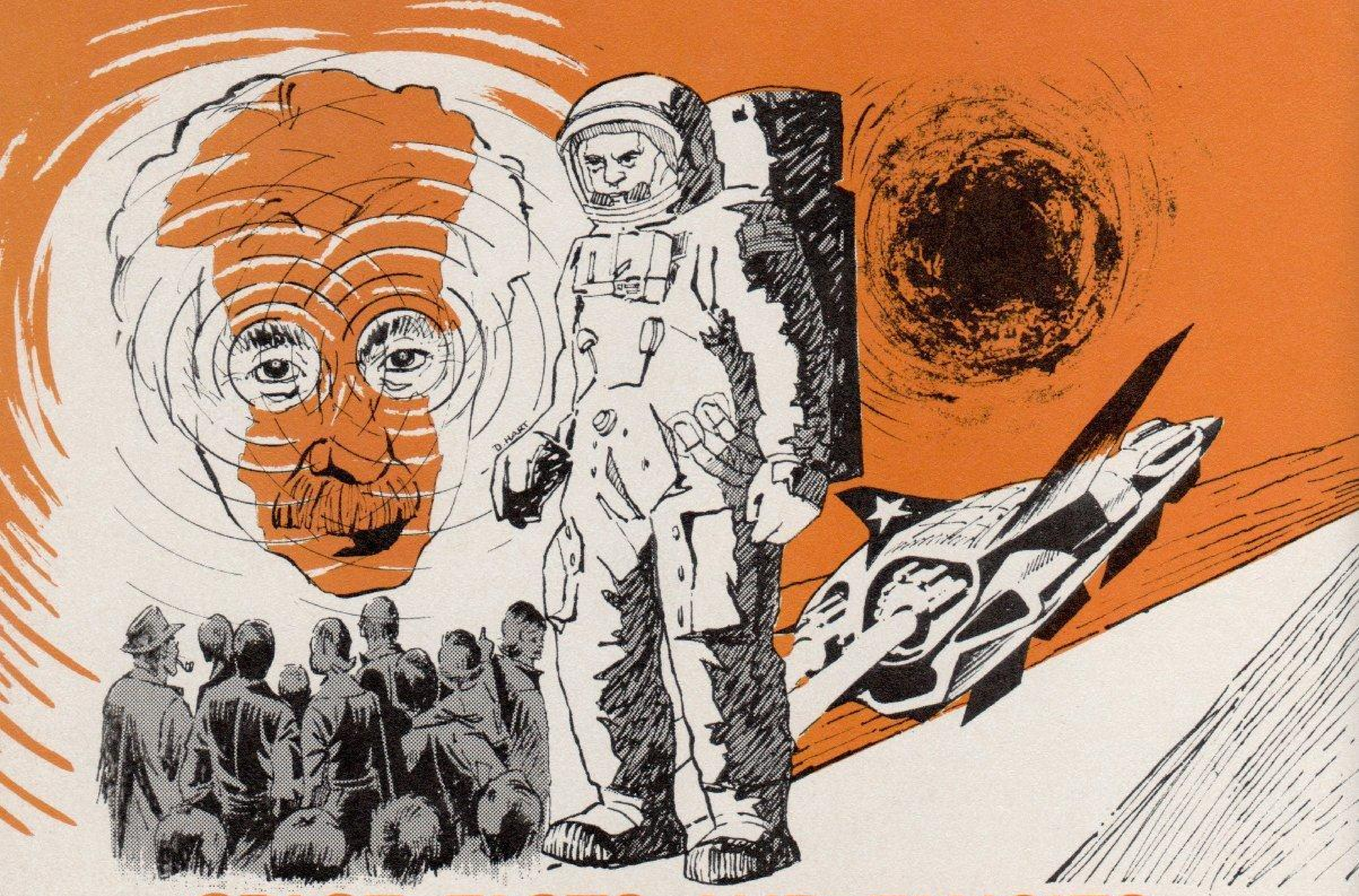
In June 1973 Captain Charles Conrad of the United States Navy became the man to stay in space longer than anyone else when his *Skylab*/ Mission ship passed the previous target of over 715 hours in space, on the eleventh day in space.

In December 1972, Captain Cernan was a member of the crew of *Apollo-XVII* which spent over twenty-two hours on the moon collecting rock and soil samples. They landed in Taurus-Littrow area LRV3 and found evidence of volcanoes.

E is for Edward White

Ed White was the first American and the second man to walk in space; Leonov of USSR being the first man to leave a space ship and to float freely in outer space. But White walked eleven minutes longer in space than Leonov. This was during the flight of *Gemini-4*, which took place in June 1965, in which White and Jim McDivitt took part.

Unfortunately, in 1967, Ed White was to lose his life, along with Chaffee and Grissom, when there was an accident to their spacecraft during a final test before an Apollo take-off, resulting in America's first space tragedy.



SPACE FACTS AND FANCIES

THE AETHERIUS SOCIETY

George King, who was the founder of this scientific society, is also the Earth Representative of the Interplanetary Parliament which, according to George, meets on the planet Saturn. George was elected to the space parliament by a strange voice telling him of his new office, and later he had a communication from Aetherius, the cosmic leader who lived on Venus.

George King later went into a trance before an audience in London's Caxton Hall and, with George as his medium, Aetherius spoke to the crowd in various languages including French and Norwegian. The audience was warned to heed Aetherius's words, for only five years previously he and his people had saved the earth from the Fishmen who had tried to take over the earth because their own planet was becoming dry!

SPACESHIPS OF LONG AGO

There are the remains of an ancient airfield near the old city of Nazca in Peru. Many people believe that spaceships landed there thousands of years ago, and there is a theory that the ancient gods—which primitive natives once believed descended from their heavenly homes in the skies—were in fact, astronauts from outer space whose fiery ships, strange suits and weapons made simple folk think that they were gods with magical powers. Some writers even believe that the fiery chariots of the Old Testament were actually spaceships taking the old prophets up to some new heavenly destiny!

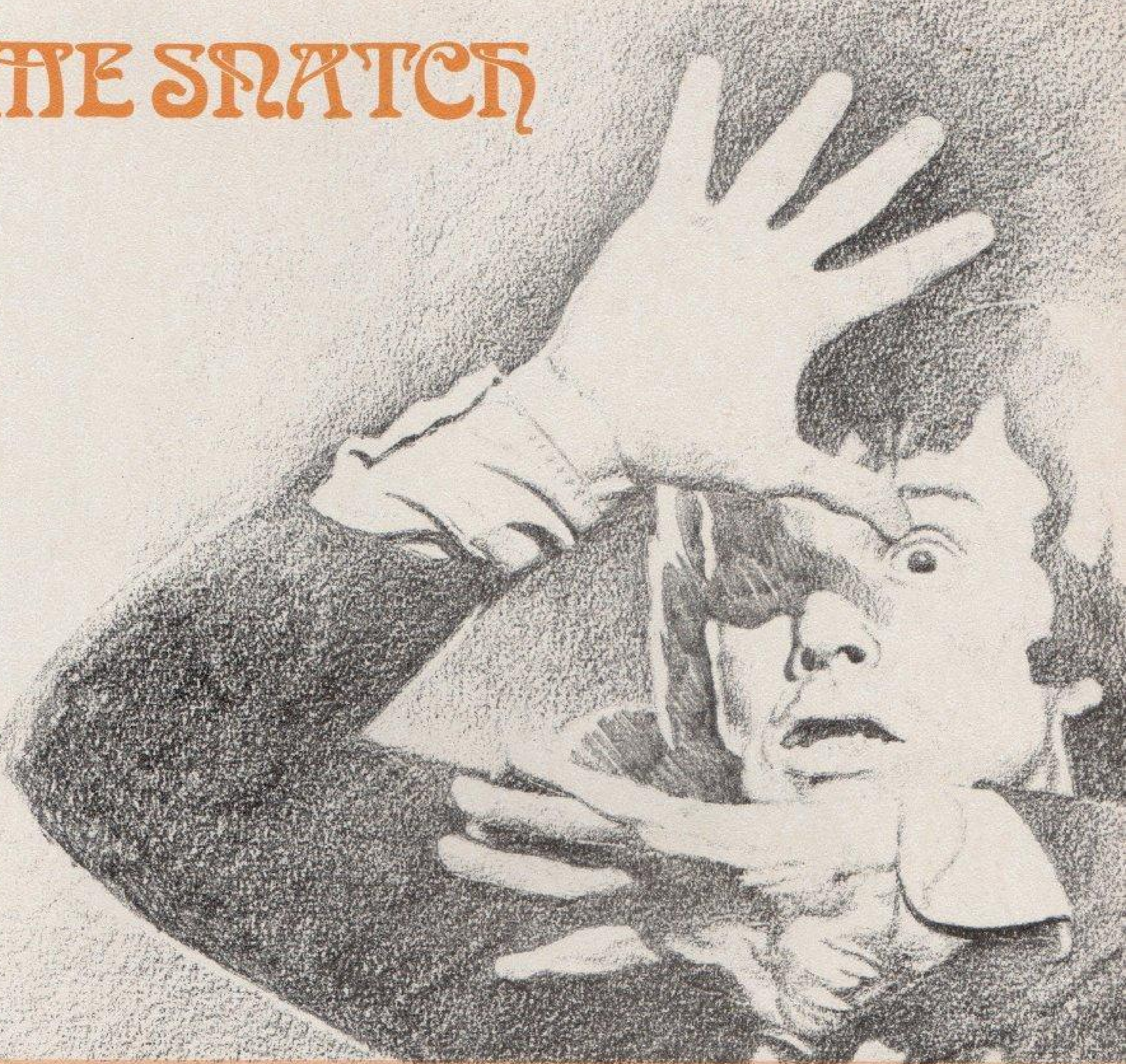
BLACK HOLES

Black holes are believed by scientists to exist in space where the forces of gravity are so great that anything or anyone sucked into one of these holes will be held captive there forever. However, a new theory recently suggested that a person might enter from one black hole into another and so on, thus entering a different universe each time, but never actually returning to the first original black hole. Others disagree with this theory and say that if the holes rotate, then you might even travel through time and a person might even see himself actually entering the first black hole!

MAN ON THE MOON

Neil Armstrong, an American astronaut, was the first man to step out onto the moon's surface, saying as he did so, "This is one small step for man but a giant leap for mankind." A true statement indeed and one which will be long remembered by all who heard it.

THE TIME SNATCH



One moment the desert was an empty waste, shimmering heat, and the next it was a screaming dustbowl.

Ben Hunter saw it, but did not believe his own eyes. The grizzled old prospector flung up a protecting arm as the flying sand bit into his leathery skin and threatened to blind him. He sought shelter against the laden flanks of his mule Henrietta. Peering out over the top of the panniers that contained his mining tools and stores, Ben made out the gleaming outline of the flat, saucer-shaped craft that was settling into the hollow that it had scooped in the sand as it plunged from the sky.

The high-pitched whine that had tortured Ben's eardrums, died slowly into silence. He straightened his stooped back. "Holy smoke! It must be one of them U.F.O.s," he muttered.

Now he could make out the bluish-green hull, devoid of windows. Then something rose from the top of the craft, a sinuous arm of metal, topped by a bell-shaped object that moved restlessly as if inspecting its surroundings. As it swung in Ben's direction, the questing 'eye' became still.

Sensing sudden danger, the prospector flung himself into the sand and began to crawl away towards the shelter of the rocks where he had camped the night. But before he reached them, something red and jelly-like, pulsing with an inner fire, emerged from the spacecraft and came after him.

Ben saw it over his shoulder. He staggered to his feet with knees that had suddenly become weak with fear. He had faced many dangers in the desert during his years of prospecting for gold, but this new threat was so loathsome that he wanted to be sick. Fighting his reeling senses, he grabbed for the pistol in his belt that he kept ready in case of rattlesnakes.

The red blob was undulating over his head. As he fired into the pulsing mass, he smelt the overpowering odour of musk. His voice managed a hoarse yell as he felt himself being drawn upwards. Then a merciful darkness descended upon him as he lost consciousness.

Despite the air-conditioning in the low, one-storey research building, Sarah Jane Smith felt stifled. She was in the top-security lab of the UNIT installation on Last Hope Ridge that overlooked the desert. A few paces away stood the Doctor, poring over some scientific instruments with Gustav Bhoul, the scientist who had been brought in by UNIT to examine a strange crystal, provisionally named Crystal Z. It had been brought back from an unmanned inter-planetary probe. They had soon discovered that the unstable nature of Crystal Z required a hot and bone-dry atmosphere. Hence its transfer to the desert laboratory—and the presence of the Doctor to assist Dr Bhoul in a task that could be fraught with danger.

"I don't believe it!" Bhoul's incredulous whisper reached Sarah's ears as she moved towards one of the windows.

She glanced out at the burning blue of the sky and thought longingly of the cool grey of the sky over Britain. She sighed and lowered her gaze to the electrified security fence that ringed the installation. UNIT guards in shorts and shirt sleeves stood wilting in the heat. Sarah guessed that their guns must be almost too hot to hold.

"I just don't believe it!" It was Bhoul again. He had straightened from the bench where Crystal Z lay under ultra-violet rays. He wiped perspiration from his brow as he stared at the Doctor. "Did you ever see a substance behave like this before?"

The time-and-space traveller fingered his chin. "Very unusual, isn't it?" he agreed. Then he frowned thoughtfully. "But I have a feeling that I've come across Crystal Z before. If only I could remember where. . . ."

Sarah had turned her gaze to the two pondering scientists. But a sudden movement outside drew her attention to the window again. She stiffened and gasped. "Doctor—look!"

Making straight for the security fence was a stoop-shouldered figure in dusty clothes. His wide-brimmed hat cast a shadow over his bearded features, and he shambled through the sand in an oddly stiff-legged manner.

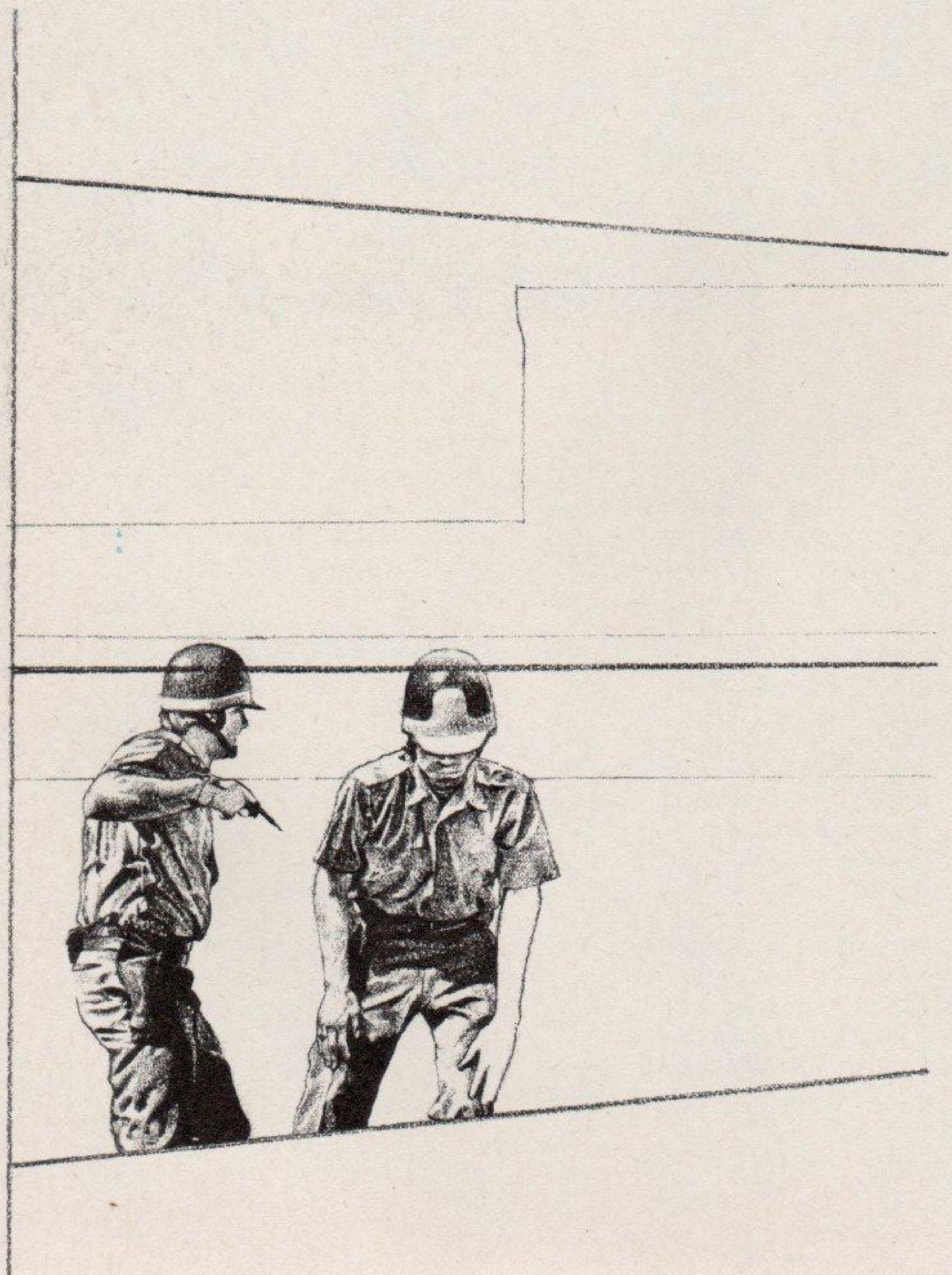
"Why don't they stop him? That fence is electrified!" rapped Dr Bhoul, who was staring out over the Doctor's shoulder.

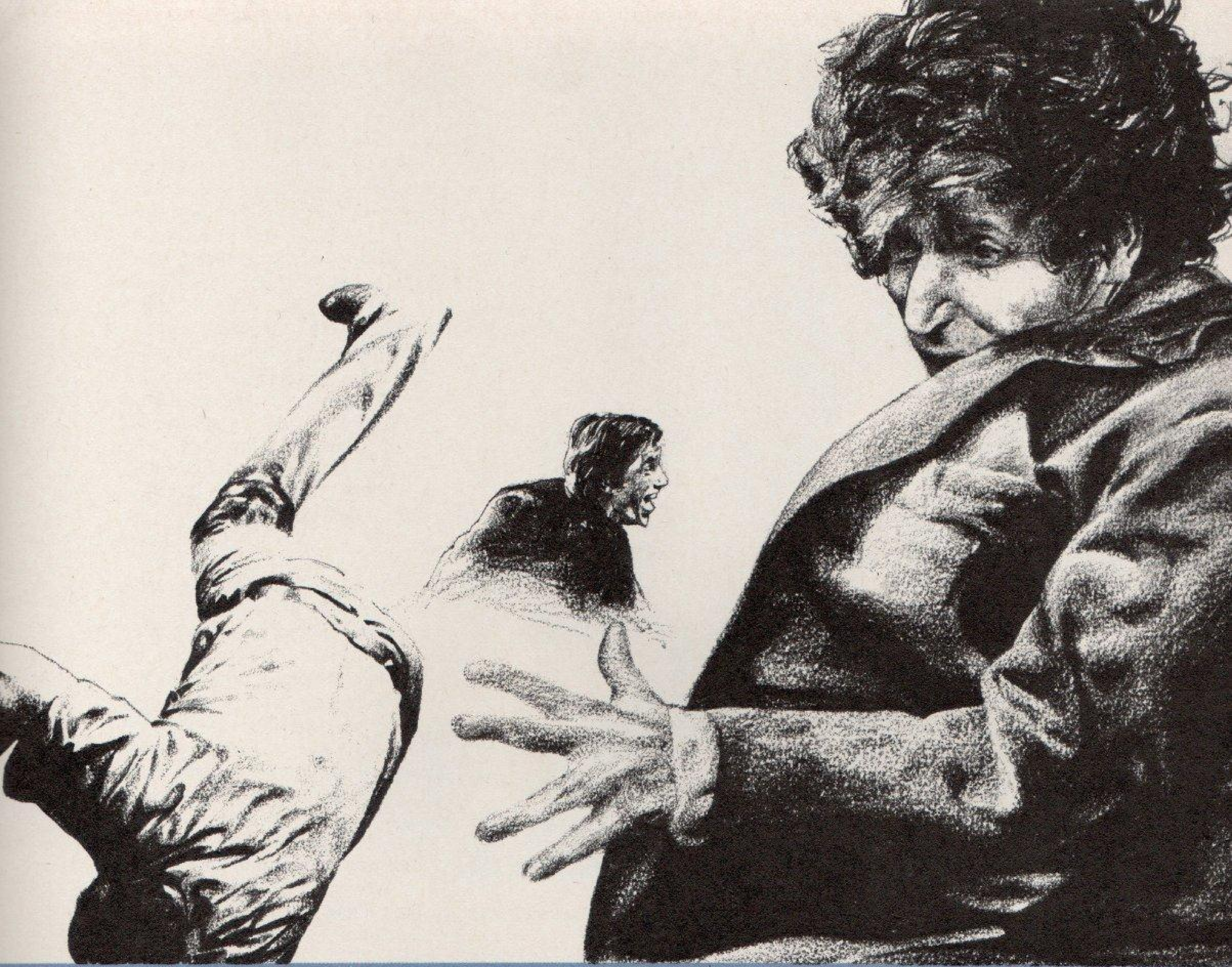
But it was obvious that the UNIT guards were already aware of the danger. They were dashing towards the spot, yelling and waving to try and warn Ben Hunter of his danger.

"Oh, no! It's too late!" sobbed Sarah.

The prospector had reached the fence. He stretched out a hand. There was a blinding flash. When their eyes had recovered from it, an astonishing sight awaited them. Instead of a body crumpled in the sand outside the compound, they saw the dusty figure still shambling towards the laboratory. And now he was inside the security fence!

The Doctor stiffened. He stepped quickly to the bench again, and picked up the small, lead-lined box in which Crystal Z had been brought from Cape Can-





averal. "With your permission, Dr Bhoul, I shall put the Crystal in my pocket until we find out what our strange visitor is after," he said.

Even as he slipped the box out of sight, the other scientist grabbed Sarah's arm and hustled her away from the window. "He's walking straight at the blank wall!" he shouted. "Look out, Doctor!"

They shielded their eyes and shrank away as a section of the wall disintegrated with a searing flash of cold light.

When they recovered, they saw the old prospector staring around the laboratory with a fixed stare. "Where is the Crystal?" he asked. His gruff voice was flat and toneless.

The Doctor took a step towards him. "What crystal are you talking about?" he asked.

"It belongs to us. We have come to take it back." The prospector raised a gnarled hand.

The Doctor reeled back, and knew that the other was exerting a force-field. The UNIT guards were also flung back as they came racing towards the gaping hole in the wall. They lay motionless in the hot sand.

"There is no crystal—" began the Doctor.

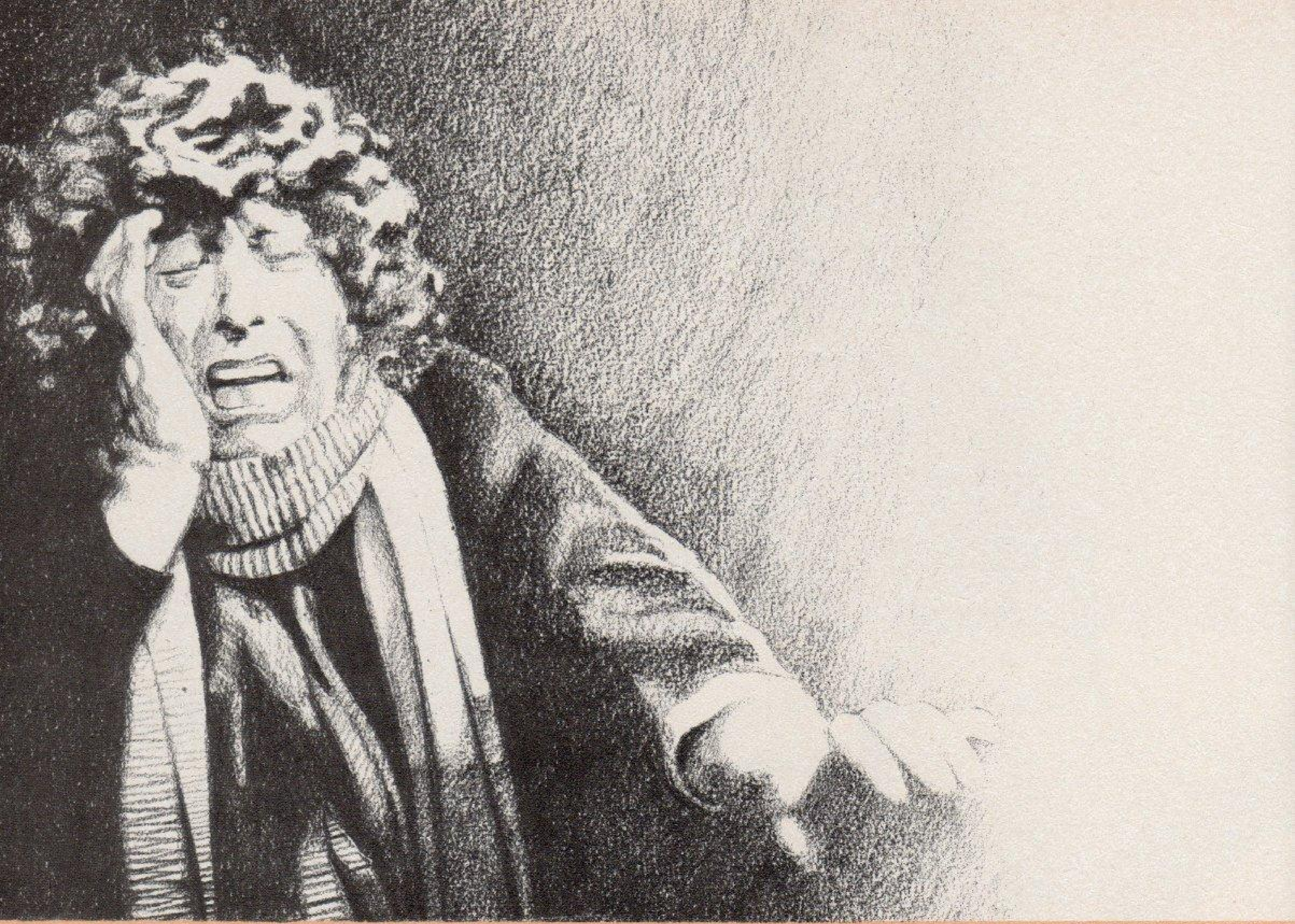
He broke off. The intruder was not listening to him, but was pivoting slowly round. When he had scanned the room, he rounded angrily on the Doctor. "It was here. You have hidden it. That is your mistake."

He stabbed a finger in the direction of Sarah and Dr Bhoul. The Doctor saw them both stiffen into immobility. The prospector's finger stabbed again, and this time the Doctor felt a cold paralysis assailing his limbs.

As he fought it, he saw the old man take a small transparent cube from his pocket. He placed it on the bench next to the scientific instruments, then turned to leave. As he did so he spoke over his shoulder: "It is a device to hurl you into the Time Zone—and the Crystal with you."

As the dusty figure shambled through the hole in the wall and made for the fence, the Doctor summoned all his strength to try and reach the Time Device.

But for all his efforts he moved



like a man in a nightmare, with movements that were maddeningly slow. His hand was creeping slowly towards the plastic cube when it seemed to melt away. In the same moment he was aware of an awful whirling sensation as he was drawn into the Vortex. Through the mist that covered his eyes, he saw Sarah and Dr Bhoul spinning away, too. . . .

That mind-searing journey through Time ended for the Doctor with a jolt that bruised every bone in his body. He lay with his eyes closed, allowing his strength to return to his limbs.

But the sound of Sarah's moan made him struggle to his knees. He saw the girl huddled in some undergrowth beneath a clump of towering pines.

He got to his feet and ran towards her. "Sarah, are you hurt?"

She opened her eyes, and he saw the relief that sprang into them. "Oh . . . Doctor, wasn't that an awful sensation?" she gasped.

He helped her to sit up. "Don't exert yourself, my dear," he urged. "Travelling through Time was easy with the Tardis, but without it—well, we're lucky to have survived." He broke off and glanced around. "I trust Dr Bhoul was as fortunate as us. Come, you rest against this tree, and I'll search around for him."

But as the Doctor rose to his feet, Sarah struggled upright. "Oh, no. I'm not being left behind!" she said firmly. "Goodness knows what period of Time we've been hurled into. I don't want to be separated from you."

As they moved beyond the shelter of the pines, they saw that they were on a high, rocky plateau. The Doctor went ahead, alert for danger.

Suddenly his foot kicked against something that tinkled. He bent down with an exclamation. "What luck! It's the Time Cube," he said, and held it up for Sarah to see.

"Will it be any good to us?" she wondered.

The Doctor was poring over the device, examining the minute controls. "Amazing!" he murmured. "A miniature Tardis!" He straightened and nodded encouragingly. "Yes. I believe I might be able to reverse the journey, and get us back to the lab," he said. "But we must find Dr Bhoul first. We can't go without him."

Sarah was glancing over his shoulder when she saw the Cave Man leaping down from the rocks. A strangled scream escaped her. The Doctor whirled to meet the intruder.

He was a squat, powerful figure, ape-like in many ways, and naked save for an animal skin. He whirled a wicked-looking stone club as he lumbered forward.

The Doctor ducked under the first blow, and the force of it put the primitive hunter off balance. Desperately the Doctor grappled with him.

Sarah saw the two crash to the rocky ground, and roll over, the Cave Man uttering hoarse animal cries.

Sarah picked up a stone, hoping to join in the fight, when suddenly the ground shook and she heard a deafening blare. She turned to see the towering, long-haired figure of a Mammoth appearing from behind the rocks. At the sound of the monster's blare, the Cave Man tore himself free and darted away.

The Doctor stood swaying weakly, and staring at the Mammoth. The creature had stopped, its trunk raised as if scenting its prey.

The Doctor gathered his coat around him and backed away slowly to where Sarah stood trembling. "When I say the word you must get behind the rocks and hide," he began.

But another figure had appeared from behind the rocks. It was Dr. Bhoul. Not noticing the danger, he ran towards his friends with a cry of relief.

"Sarah! Doctor! Thank Heaven I've found you."

The Doctor sprang to meet him, waving a warning: "Look out! Behind you!"

The scientist turned, and shrank away at the sight of the prehistoric monster. The Mammoth trumpeted again, and lumbered forward.

The Doctor's fingers were working frantically at the Time Cube. In the second before Dr Bhoul would have been crushed beneath the thundering feet, the trio were snatched upwards into the Vortex. . . .

The desert heat struck them like a blow as they entered their own Time Dimension again.

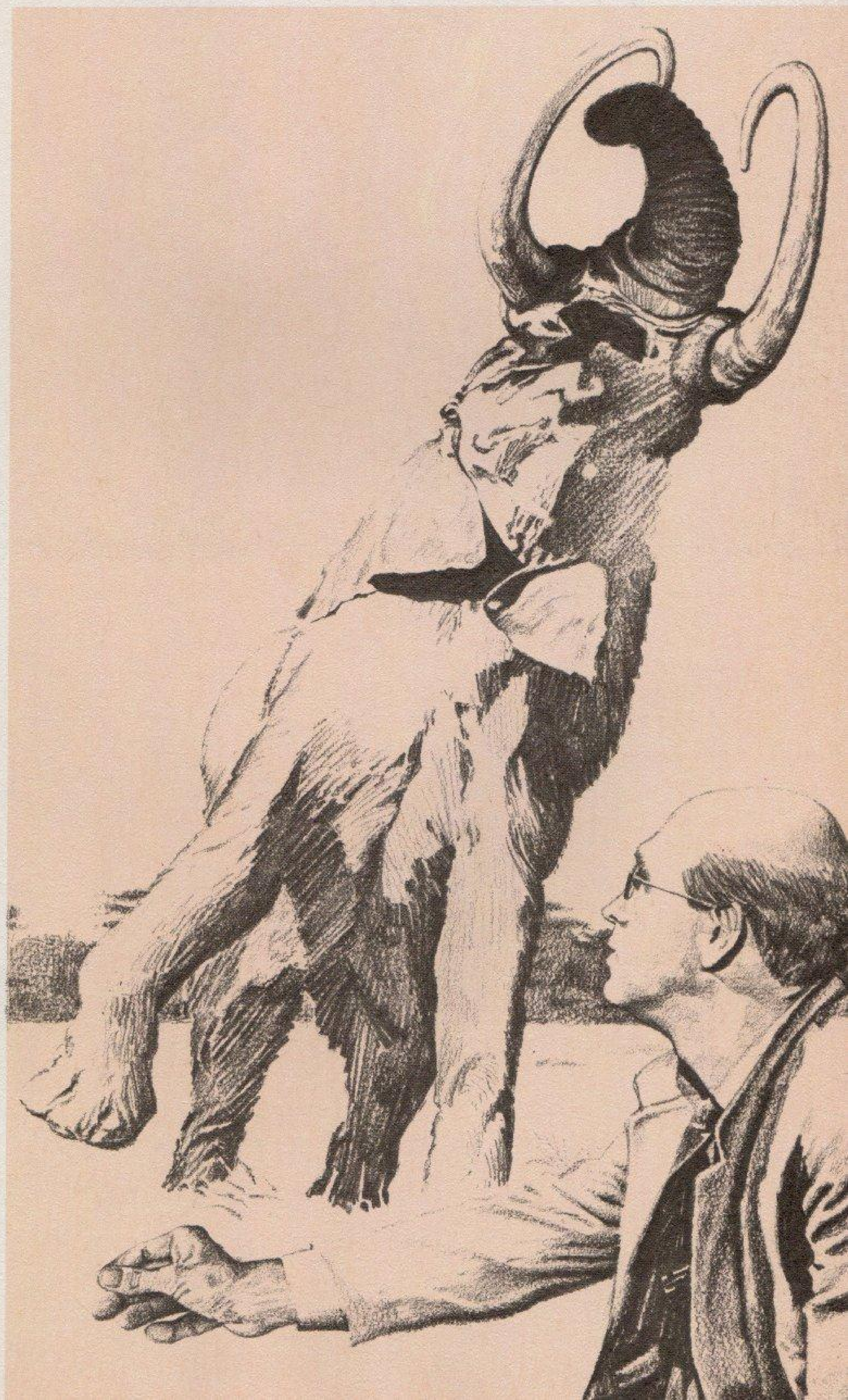
The Doctor was the first to recover. He opened his eyes to find a mule looking down at him. It was Henrietta, still laden with the prospector's gear.

The Doctor rose and shook the hot sand from his clothes. He glanced past the mule and saw the figure of Ben Hunter lying unconscious in the sand. He was examining the old man when Sarah and Dr Bhoul joined him.

"Isn't he the one who came into the laboratory?" said Bhoul.

"It must be . . . and he's an alien in that case," said Sarah.

But the Doctor shook his head slowly. "I think not, my friends. The aliens—whoever they were—merely drugged him and used his body. But he seems to be all right, poor old fellow." He broke off, and checked his pocket for the lead box. With a smile he held it up: "And the Crystal is all right, too," he added.



A SPACE RIDDLE-ME-REE

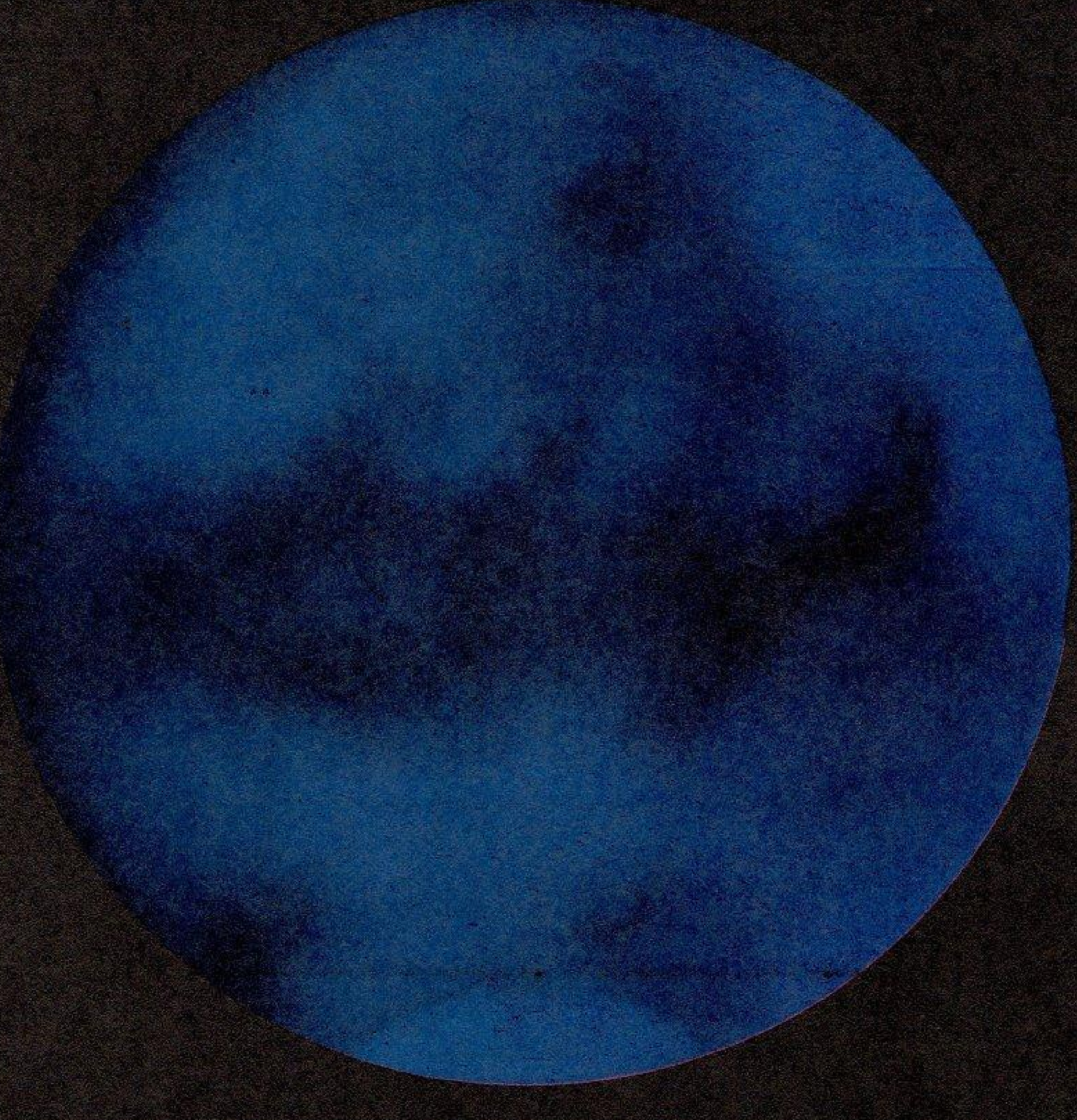
My first letter is in satellite and also in sun,
My second's in Armstrong, you all know what Neil has done!
My third is in The Doctor but alas not in Who,
My fourth is in Gagarin, the first spaceman, to you!
My fifth is in White, he's an astronaut named Ed,
My sixth is in James and John not in Gemini or Fred.
My seventh is in Apollo, a project to launch men to the moon,
My eighth is in NASA, an organisation to space a great boon.
My ninth is in rocket, but you'll find it not in star,
My tenth is in Saturn, a planet in space afar.
My eleventh is in cosmic, but it is not in ray,
My twelfth is in homing, a missile device space folk say.
My thirteenth is in booster which is used to increase speed,
My fourteenth is in health which all good spacemen need.
My whole is the name of the Doctor's companion,
A girl who is brave and never heeds danger,
Though she may be rather afraid,
When she meets some strange planet stranger.
Now riddle-me-riddle, riddle-me-ree,
Whatever can this girl's name be?

Check for answer on page 76

PICK THE PLANET PEOPLE

1. I am the smallest of the planets and share my name with the messenger of the gods. Who am I?

2. I am known as the red planet and share my name with the god of war. Who am I?



3. I take 164 years to revolve once around the sun and I share my name with the god of the sea. Who am I?

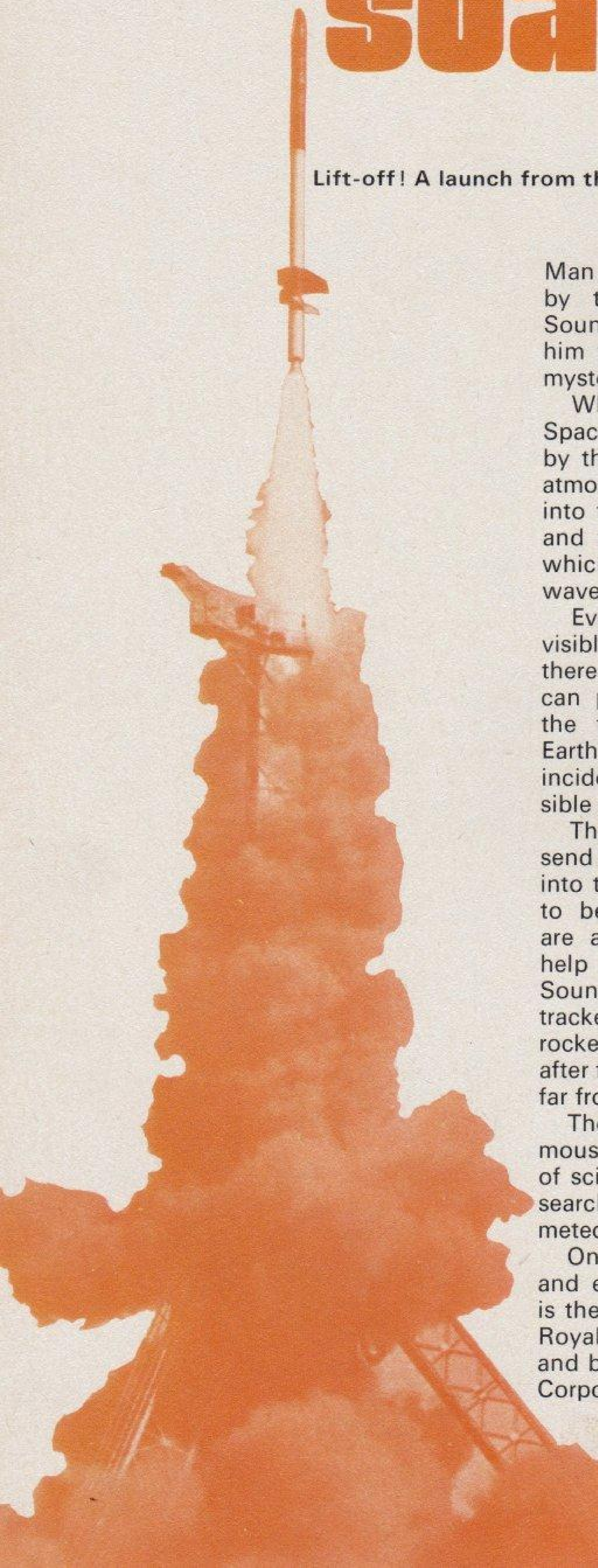
4. I am the planet which lies between the earth and Mercury and I share my name with the goddess of beauty. Who am I?

5. I am one of the smallest planets and I share my name with the god of the Underworld. Who am I?

6. I am the planet with the highest atmosphere and I share my name with the god of seedtime and harvest. Who am I?

Check your answers on page 76

SKYLARK soaring high



Lift-off! A launch from the range at Woomera, South Australia.

Man has always been fascinated by the mysteries of Space. Sounding rockets are helping him to unravel some of those mysteries.

When scientists look towards Space their vision is restricted by the presence of the Earth's atmosphere. They can only see into the region of visible light, and the area of the spectrum which contains certain radio waves.

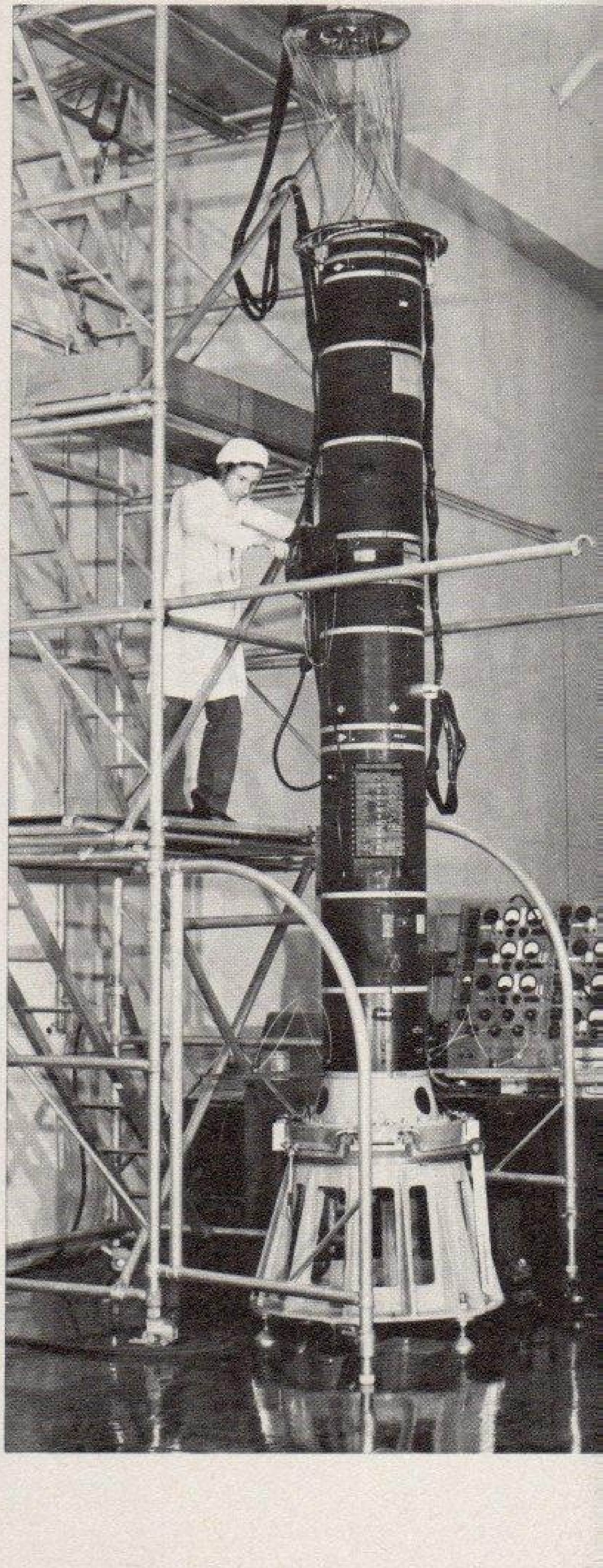
Even while studying the visible region with telescopes there are difficulties. Clouds can present problems, as can the turbulent motion of the Earth's atmosphere. It is this, incidentally, which is responsible for the 'twinkling' of stars.

The obvious answer is to send cameras and instruments into the actual areas which are to be studied. And scientists are able to do this with the help of sounding rockets. Sounding rockets are ground-tracked equipment-carrying rockets, which descend to earth after their mission, and land not far from their launch site.

They have opened up enormous possibilities in many fields of science, including stellar research, and geomagnetic and meteorological studies.

One of the best-developed and efficient sounding rockets is the Skylark, designed by the Royal Aircraft Establishment, and built by the British Aircraft Corporation in Bristol.

Technicians working on a Skylark rocket.



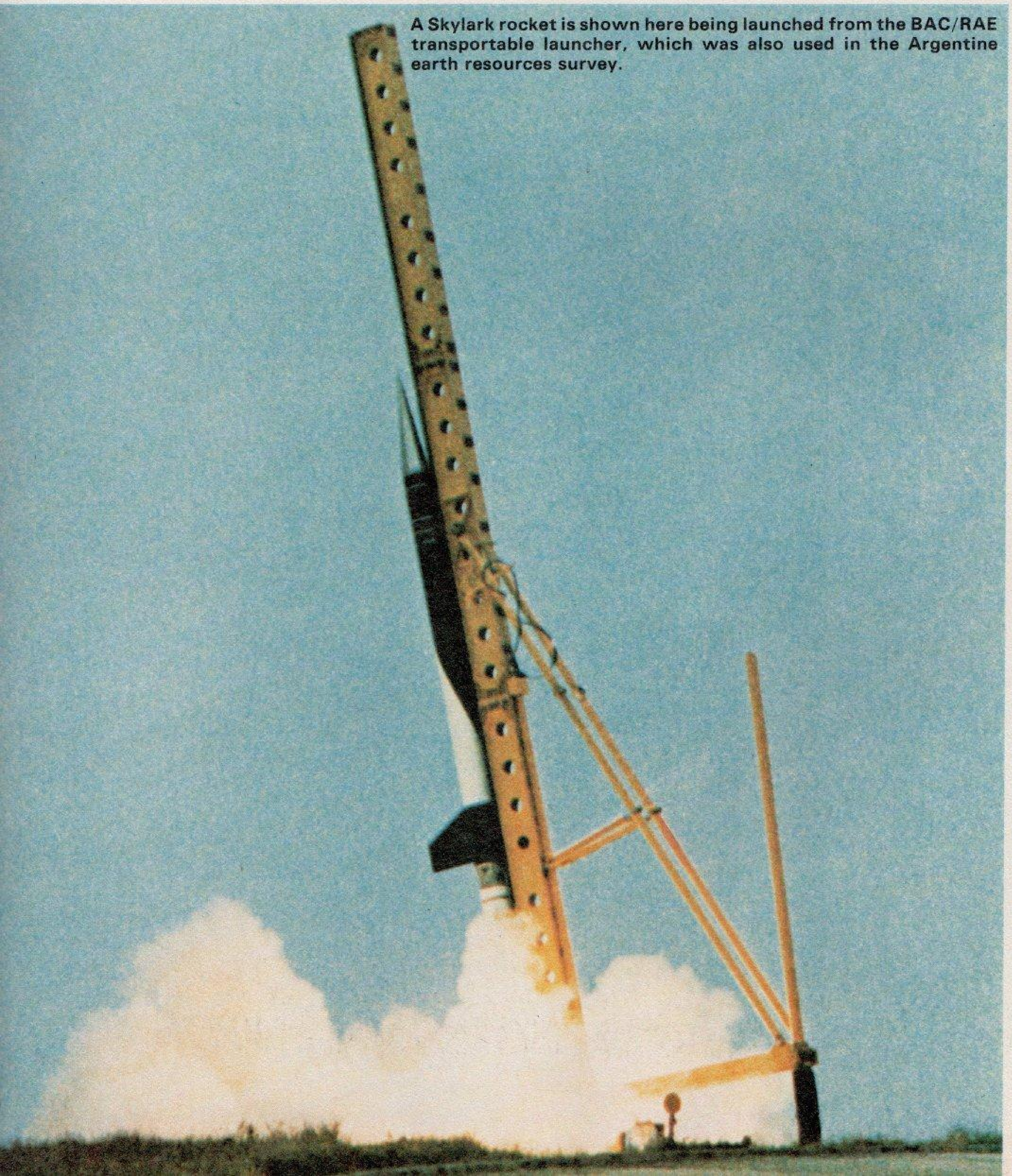
The first Skylark rocket was launched in 1957, and since then Skylark rockets have been used for literally hundreds of important research projects.

In 1973 a Skylark rocket successfully brought back to earth unique photographs of 400,000 square kilometres of agricultural land in Argentina, which became the basis of a very valuable land-use survey and crop inventory. With this achievement Skylark became the world's first earth resources survey rocket.

The beneficial applications of work like this are very apparent, particularly in a world where food shortages, pollution, and wastage of resources are constantly growing problems. A survey like the Argentina project would have taken weeks by scientists working on land, and the photographs taken by equipment aboard the Skylark helped enormously.

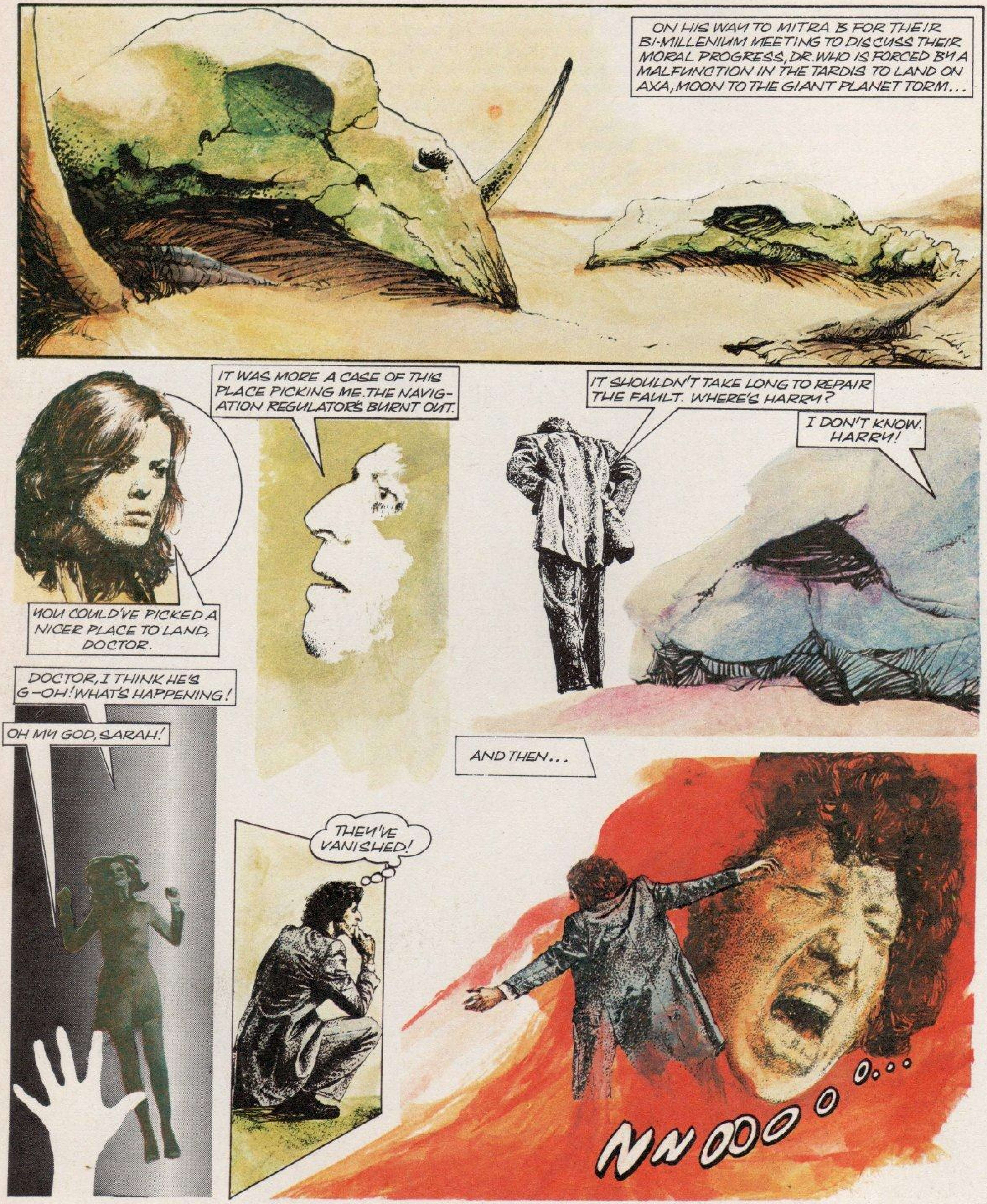
Skylark rocket launchers are transportable, and over the years Skylark has been launched from various sites, carrying scientific equipment on behalf of research establishments in many parts of the world.

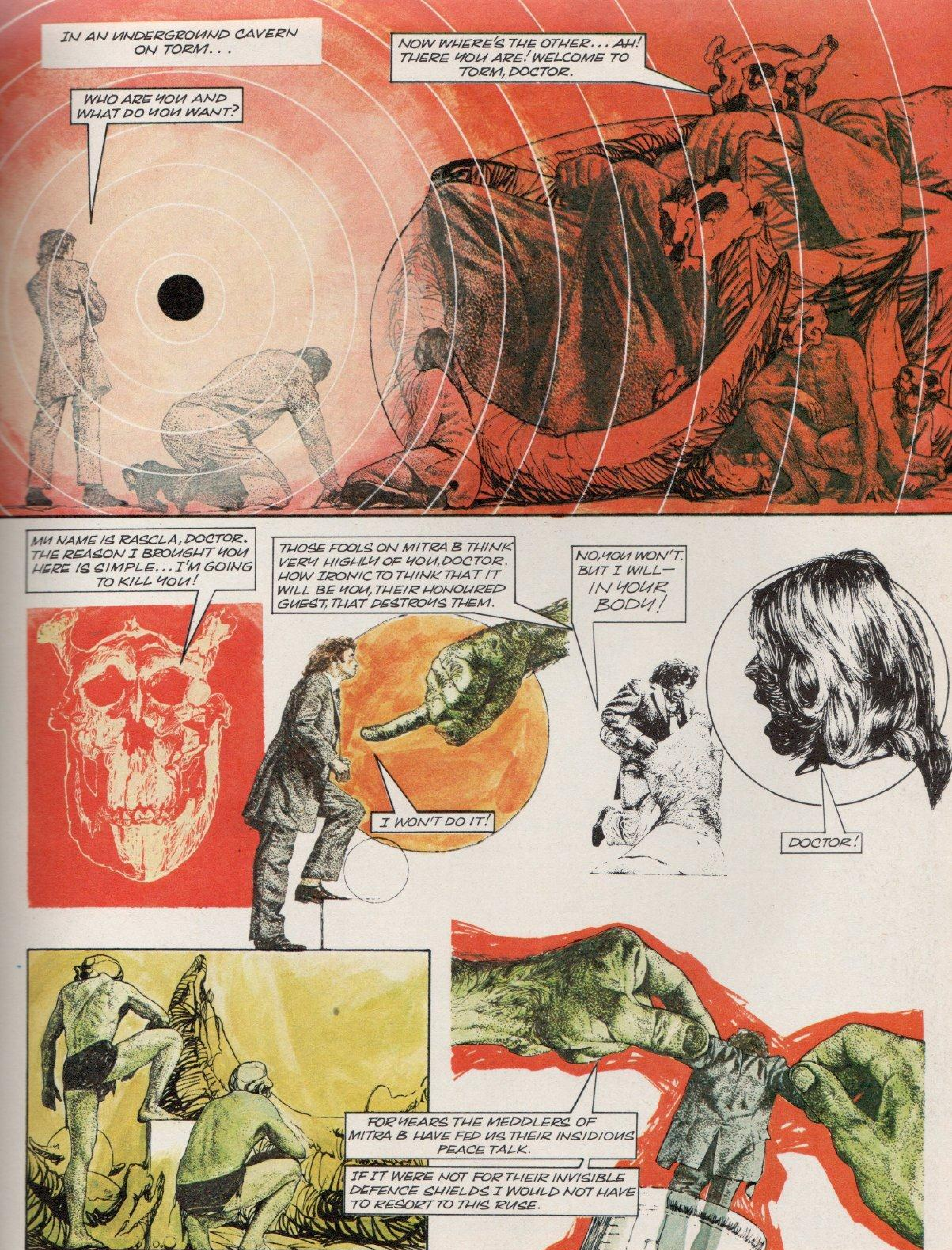
Skylark is soaring high—and contributing in a very positive way to all kinds of exploration and research.

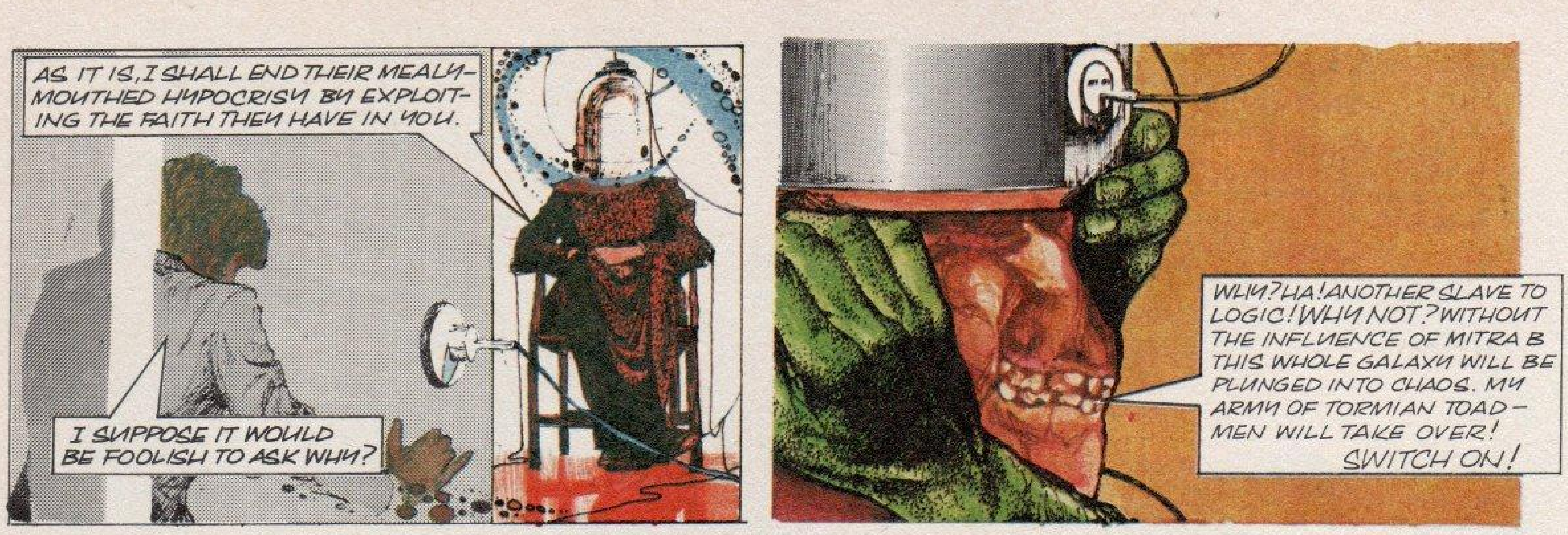


A Skylark rocket is shown here being launched from the BAC/RAE transportable launcher, which was also used in the Argentine earth resources survey.

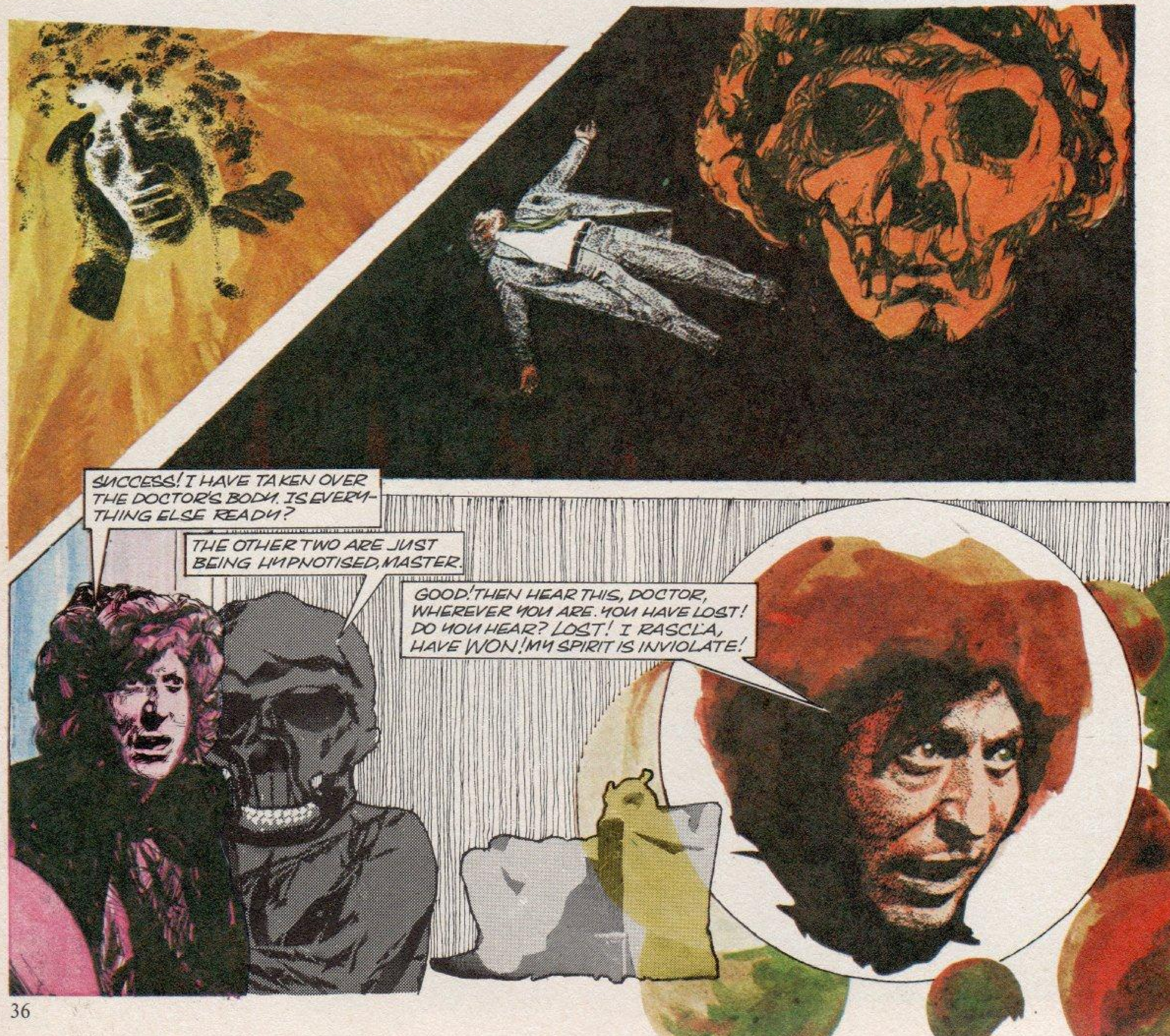
THE BODY SNATCHER

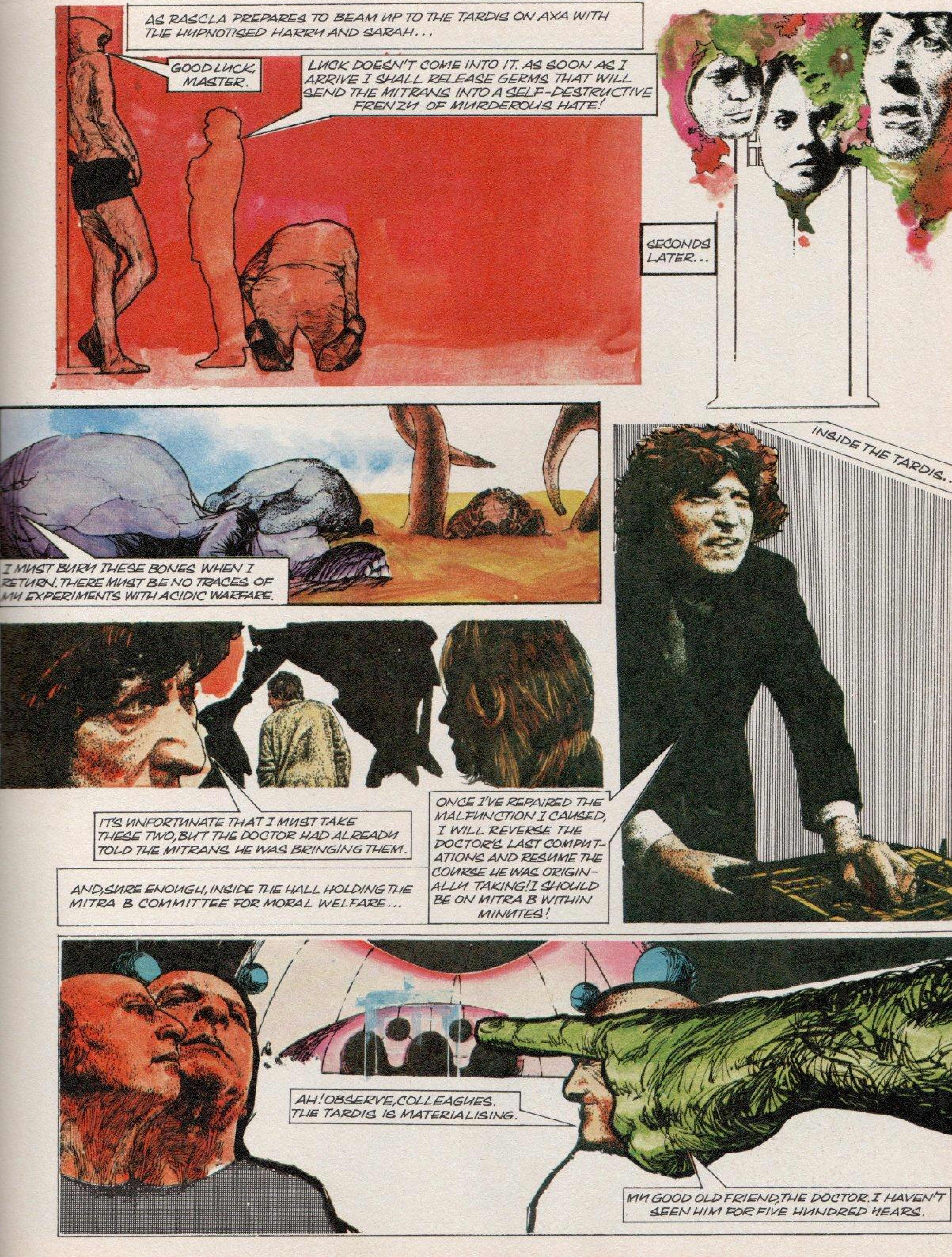

ON HIS WAY TO MITRA B FOR THEIR BI-MILLENIUM MEETING TO DISCUSS THEIR MORAL PROGRESS, DR. WHO IS FORCED BY A MALFUNCTION IN THE TARDIS TO LAND ON AXA, MOON TO THE GIANT PLANET TORM...
YOU COULD'VE PICKED A NICER PLACE TO LAND, DOCTOR.
IT WAS MORE A CASE OF THIS PLACE PICKING ME. THE NAVIGATION REGULATOR'S BURNT OUT.
IT SHOULDN'T TAKE LONG TO REPAIR THE FAULT. WHERE'S HARRY?
I DON'T KNOW. HARRY!
DOCTOR, I THINK HE'S G-OH! WHAT'S HAPPENING!
OH MY GOD, SARAH!
AND THEN...
THEY'VE VANISHED!
NNOOOOO...

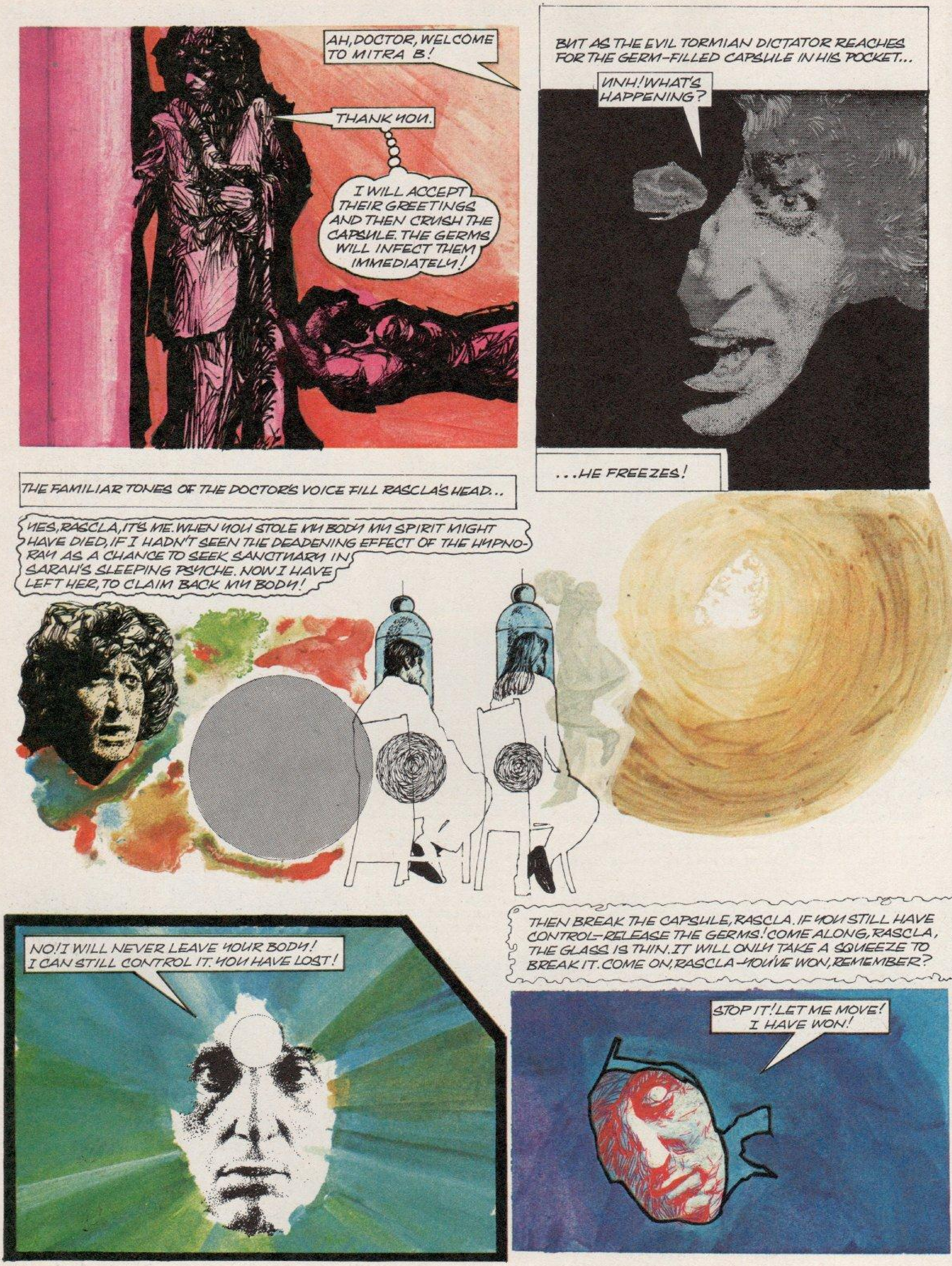

IN AN UNDERGROUND CAVERN ON TORM . . .
WHO ARE YOU AND WHAT DO YOU WANT?
NOW WHERE'S THE OTHER . . . AH! THERE YOU ARE! WELCOME TO TORM, DOCTOR.
MY NAME IS RASCLA, DOCTOR. THE REASON I BROUGHT YOU HERE IS SIMPLE . . . I'M GOING TO KILL YOU!
THOSE FOOLS ON MITRA B THINK VERY HIGHLY OF YOU, DOCTOR. HOW IRONIC TO THINK THAT IT WILL BE YOU, THEIR HONOURED GUEST, THAT DESTROYS THEM.
I WON'T DO IT!
NO, YOU WON'T. BUT I WILL— IN YOUR BODY!
DOCTOR!
FOR YEARS THE MEDDLERS OF MITRA B HAVE FED US THEIR INSIDIOUS PEACE TALK.
IF IT WERE NOT FOR THEIR INVISIBLE DEFENCE SHIELDS I WOULD NOT HAVE TO RESORT TO THIS RUSE.

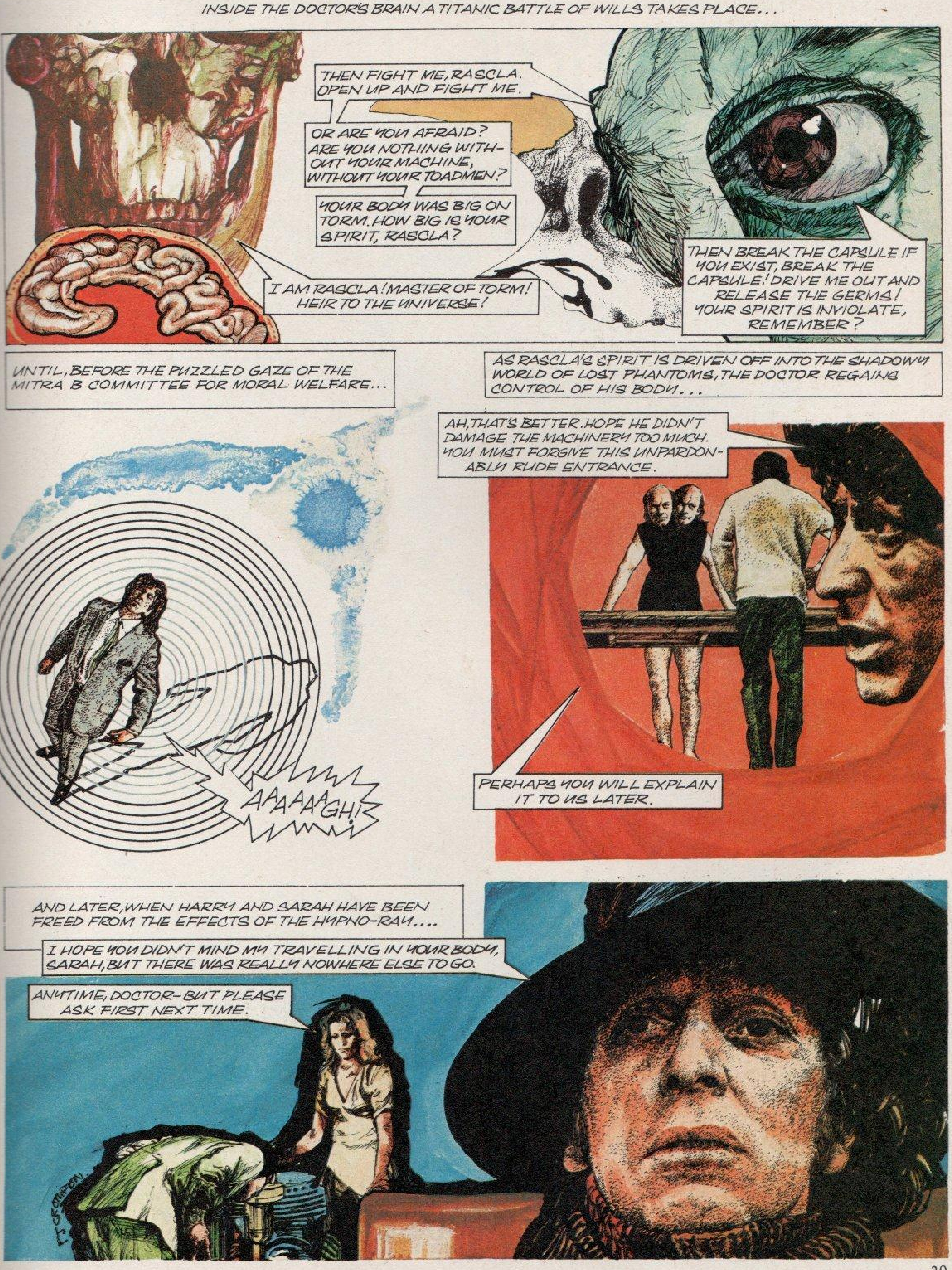

AS IT IS, I SHALL END THEIR MEALY-MOUTHED HYPOCRISY BY EXPLOITING THE FAITH THEY HAVE IN YOU.
I SUPPOSE IT WOULD BE FOOLISH TO ASK WHY?
WHY? HA! ANOTHER SLAVE TO LOGIC! WHY NOT? WITHOUT THE INFLUENCE OF MITRA B THIS WHOLE GALAXY WILL BE PLUNGED INTO CHAOS. MY ARMY OF TORMIAN TOAD-MEN WILL TAKE OVER! SWITCH ON!

AS THE NUCLEONIC REACTORS HUM INTO ACTION, THE DOCTOR FEELS AS IF A THOUSAND KNIVES ARE SLASHING AWAY IN THE PIT OF HIS STOMACH, THE COLD STEEL SLICING THROUGH THE INVISIBLE BONDS THAT KEEP BODY AND SOUL TOGETHER. HIS EYES WILL NOT FOCUS. HIS JAW IS LOCKED. HE CANNOT HEAR. AS HE STRUGGLES FOR BREATH HIS LUNGS WILL NOT RESPOND. HE FIGHTS WITH ALL HIS BEING TO CLING TO THE SPARK OF LIFE, BUT THE POWER OF RASCLA'S NUCLEONIC BODY SEPARATOR IS TOO GREAT. THERE IS A FLASH, A PAIN, A SCREAM. AND THEN HE IS FLOATING... FLOATING...


SUCCESS! I HAVE TAKEN OVER THE DOCTOR'S BODY. IS EVERYTHING ELSE READY?
THE OTHER TWO ARE JUST BEING HYPNOTISED, MASTER.
GOOD! THEN HEAR THIS, DOCTOR, WHEREVER YOU ARE. YOU HAVE LOST! DO YOU HEAR? LOST! I RASCLA, HAVE WON! MY SPIRIT IS INVIOLATE!


AS RASCLA PREPARES TO BEAM UP TO THE TARDIS ON AXA WITH THE HYPNOTISED HARRY AND SARAH...
GOOD LUCK, MASTER.
LUCK DOESN'T COME INTO IT. AS SOON AS I ARRIVE I SHALL RELEASE GERMS THAT WILL SEND THE MITRANS INTO A SELF-DESTRUCTIVE FRENZY OF MURDEROUS HATE!
SECONDS LATER...
I MUST BURY THESE BONES WHEN I RETURN. THERE MUST BE NO TRACES OF MY EXPERIMENTS WITH ACIDIC WARFARE.
INSIDE THE TARDIS...
IT'S UNFORTUNATE THAT I MUST TAKE THESE TWO, BUT THE DOCTOR HAD ALREADY TOLD THE MITRANS HE WAS BRINGING THEM.
ONCE I'VE REPAIRED THE MALFUNCTION I CAUSED, I WILL REVERSE THE DOCTOR'S LAST COMPUTATIONS AND RESUME THE COURSE HE WAS ORIGINALLY TAKING! I SHOULD BE ON MITRA B WITHIN MINUTES!
AND, SURE ENOUGH, INSIDE THE HALL HOLDING THE MITRA B COMMITTEE FOR MORAL WELFARE...
AH! OBSERVE, COLLEAGUES. THE TARDIS IS MATERIALISING.
MY GOOD OLD FRIEND, THE DOCTOR. I HAVEN'T SEEN HIM FOR FIVE HUNDRED YEARS.

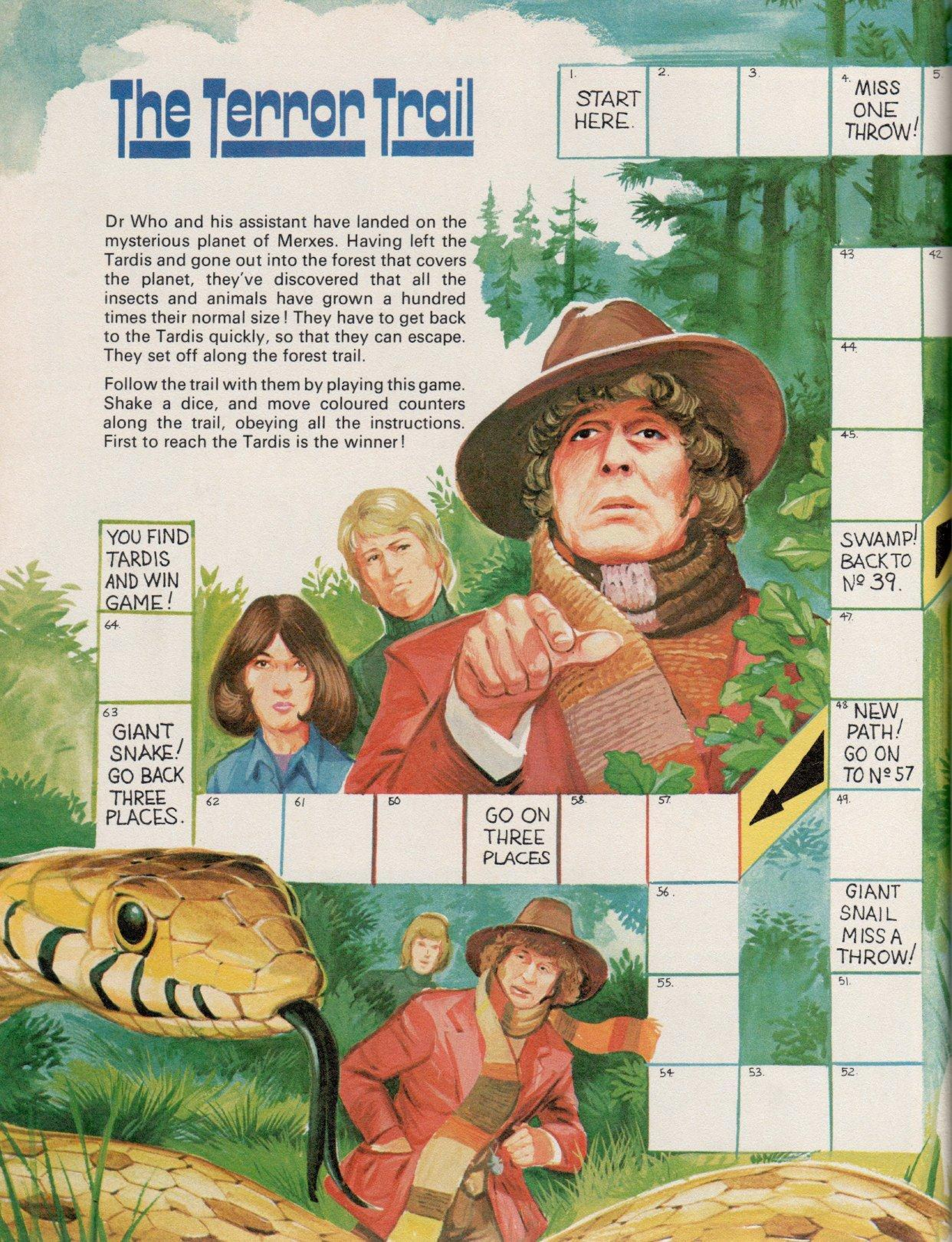

AH, DOCTOR, WELCOME TO MITRA B!
THANK YOU.
I WILL ACCEPT THEIR GREETINGS AND THEN CRUSH THE CAPSULE. THE GERMS WILL INFECT THEM IMMEDIATELY!
BUT AS THE EVIL TORMIAN DICTATOR REACHES FOR THE GERM-FILLED CAPSULE IN HIS POCKET...
UNH! WHAT'S HAPPENING?
...HE FREEZES!
THE FAMILIAR TONES OF THE DOCTOR'S VOICE FILL RASCLA'S HEAD...
YES, RASCLA, IT'S ME. WHEN YOU STOLE MY BODY MY SPIRIT MIGHT HAVE DIED, IF I HADN'T SEEN THE DEADENING EFFECT OF THE HYPNO-RAY AS A CHANCE TO SEEK SANCTUARY IN SARAH'S SLEEPING PSYCHE. NOW I HAVE LEFT HER, TO CLAIM BACK MY BODY!
NO! I WILL NEVER LEAVE YOUR BODY! I CAN STILL CONTROL IT. YOU HAVE LOST!
THEN BREAK THE CAPSULE, RASCLA. IF YOU STILL HAVE CONTROL—RELEASE THE GERMS! COME ALONG, RASCLA, THE GLASS IS THIN. IT WILL ONLY TAKE A SQUEEZE TO BREAK IT. COME ON, RASCLA—YOU'VE WON, REMEMBER?
STOP IT! LET ME MOVE! I HAVE WON!

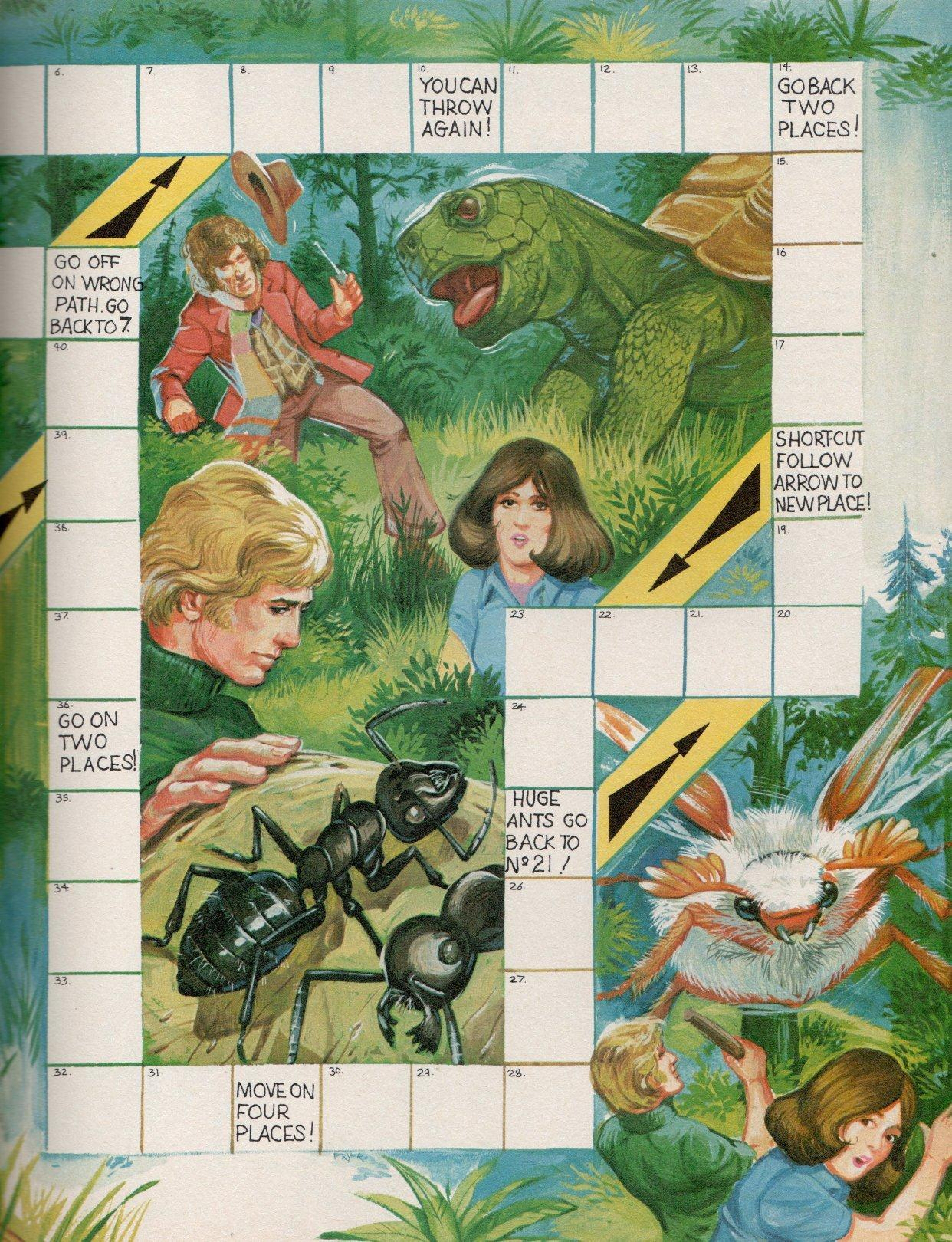

INSIDE THE DOCTOR'S BRAIN A TITANIC BATTLE OF WILLS TAKES PLACE...
THEN FIGHT ME, RASCLA. OPEN UP AND FIGHT ME.
OR ARE YOU AFRAID? ARE YOU NOTHING WITHOUT YOUR MACHINE, WITHOUT YOUR TOADMEN?
YOUR BODY WAS BIG ON TORM. HOW BIG IS YOUR SPIRIT, RASCLA?
I AM RASCLA! MASTER OF TORM! HEIR TO THE UNIVERSE!
THEN BREAK THE CAPSULE IF YOU EXIST, BREAK THE CAPSULE! DRIVE ME OUT AND RELEASE THE GERMS! YOUR SPIRIT IS INVIOLATE, REMEMBER?
UNTIL, BEFORE THE PUZZLED GAZE OF THE MITRA B COMMITTEE FOR MORAL WELFARE...
AAAAAAGH!
AS RASCLA'S SPIRIT IS DRIVEN OFF INTO THE SHADOWY WORLD OF LOST PHANTOMS, THE DOCTOR REGAINS CONTROL OF HIS BODY...
AH, THAT'S BETTER. HOPE HE DIDN'T DAMAGE THE MACHINERY TOO MUCH. YOU MUST FORGIVE THIS UNPARDONABLY RUDE ENTRANCE.
PERHAPS YOU WILL EXPLAIN IT TO US LATER.
AND LATER, WHEN HARRY AND SARAH HAVE BEEN FREED FROM THE EFFECTS OF THE HYPNO-RAY....
I HOPE YOU DIDN'T MIND MY TRAVELLING IN YOUR BODY, SARAH, BUT THERE WAS REALLY NOWHERE ELSE TO GO.
ANYTIME, DOCTOR–BUT PLEASE ASK FIRST NEXT TIME.

The Terror Trail

Dr Who and his assistant have landed on the mysterious planet of Merxes. Having left the Tardis and gone out into the forest that covers the planet, they've discovered that all the insects and animals have grown a hundred times their normal size! They have to get back to the Tardis quickly, so that they can escape. They set off along the forest trail.

Follow the trail with them by playing this game. Shake a dice, and move coloured counters along the trail, obeying all the instructions. First to reach the Tardis is the winner!


1. START HERE.
2.
3.
4. MISS ONE THROW!
5.
43
42
44.
45.
SWAMP! BACK TO Nº 39.
47.
48 NEW PATH! GO ON TO Nº 57
49.
GIANT SNAIL MISS A THROW!
51.
52.
53.
54
55.
56.
57.
58.
GO ON THREE PLACES
60
61
62
63 GIANT SNAKE! GO BACK THREE PLACES.
64.
YOU FIND TARDIS AND WIN GAME!

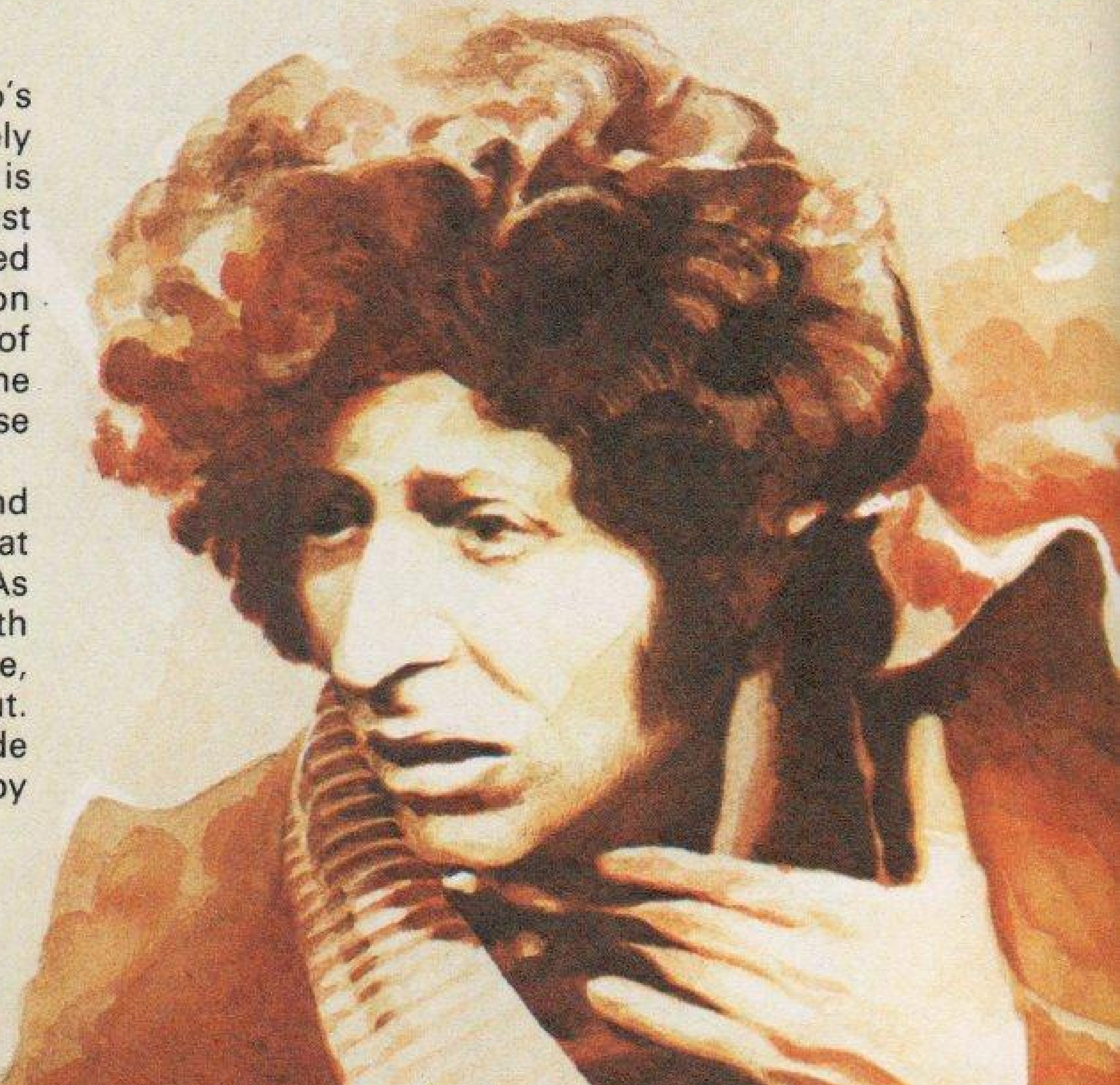

6.
7.
8.
9.
10. YOU CAN THROW AGAIN!
11.
12.
13.
14. GO BACK TWO PLACES!
15.
16.
17.
SHORTCUT FOLLOW ARROW TO NEW PLACE!
19.
20.
21.
22.
23.
24.
HUGE ANTS GO BACK TO Nº 21!
26.
27.
28.
29.
30.
MOVE ON FOUR PLACES!
31.
32.
33.
34.
35.
36. GO ON TWO PLACES!
37.
38.
39.
40.
GO OFF ON WRONG PATH. GO BACK TO 7.

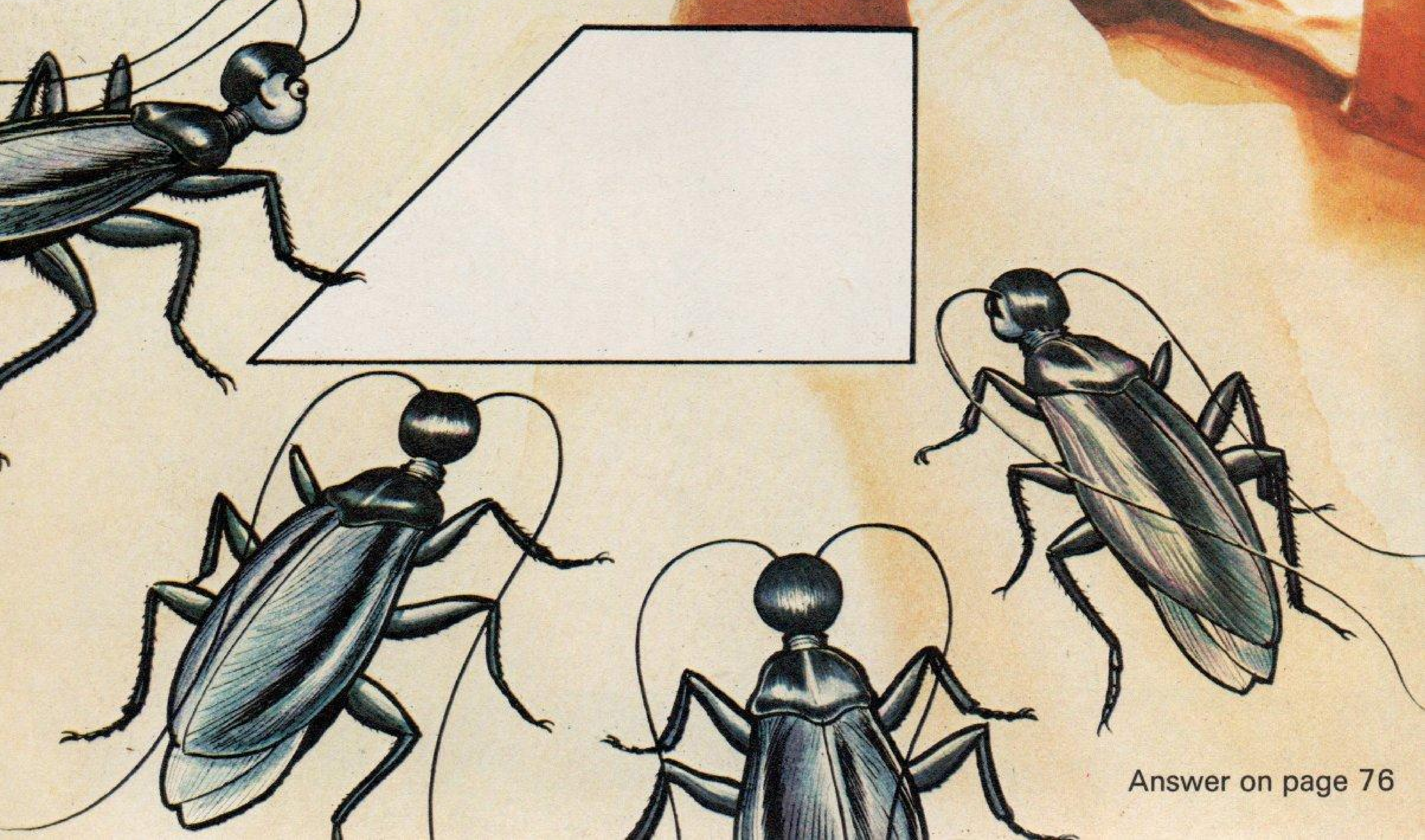
Problem of the Painted Planet

The inhabitants of Jimorris are among Dr. Who's favourite space people. They have an extremely strong sense of right and wrong, but their logic is limited and their natural intelligence is amongst the lowest in the cosmos. They are all dedicated artists and unfortunately the land left to paint on is very scarce indeed. Almost the entire surface of their planet is covered by paintings, and as the space to paint gets less, so more disputes arise over land.

The last time the Doctor visited Jimorris he found them manfully trying to resolve a land dispute that had been going on for six Earth centuries. As Jimorrisons live for an average of 25,000 Earth years this was not an exceptional length of time, but the Doctor felt it was his duty to help them out.

Can you see how the Doctor managed to divide the disputed land into four equal parts, thereby letting the claimants start their painting?





Answer on page 76

THE EYE SPIDERS OF PERGROSS

Particles of interstellar dust flashed across the viewing screen of the Tardis and, from time to time, asteroids—pitted as golfballs—waltzed rapidly by.

"That was Asteroid 617," said the Doctor to Sarah and Harry. "Another half-hour should see us there—on Phenolyadron."

"Thank goodness!" Sarah replied, stifling a yawn. "I was beginning to think this trip would never end."

"Same here!" groaned Harry. "But the half-hour means I'll just have time to finish my Asimov story."

"Science fiction again!" Sarah ribbed. "By now you ought to be able to write your own!"

"Can't speak for Harry—but *I* might someday," said the Doctor. "If I ever retire that is. What the—?"

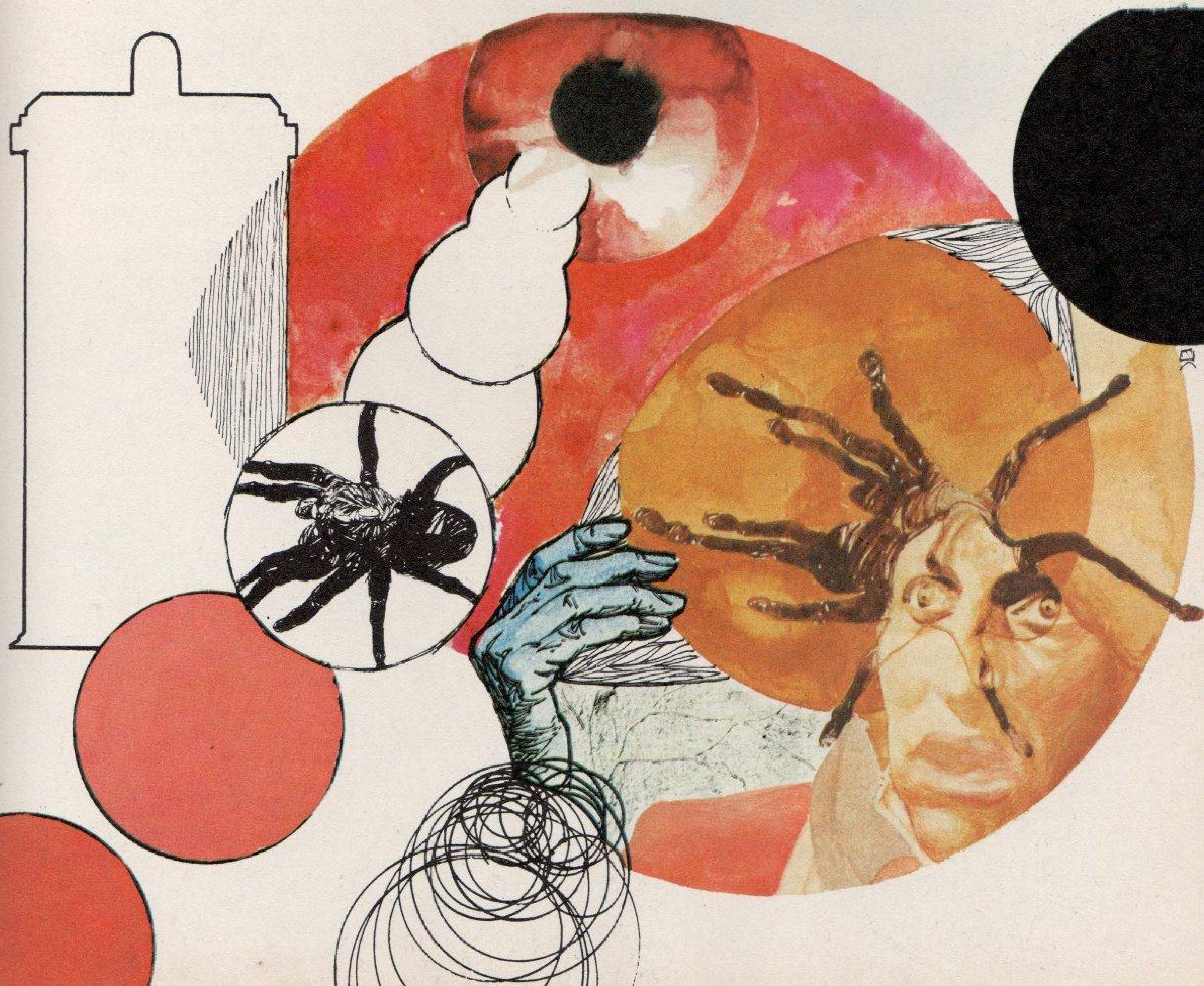
The Tardis gave a violent lurch, flinging poor Harry and his favourite S.F. book across towards the control panel, where the Doctor was now frantically twirling knobs and pushing buttons. Sarah went flying also—crashing her head against a wall.

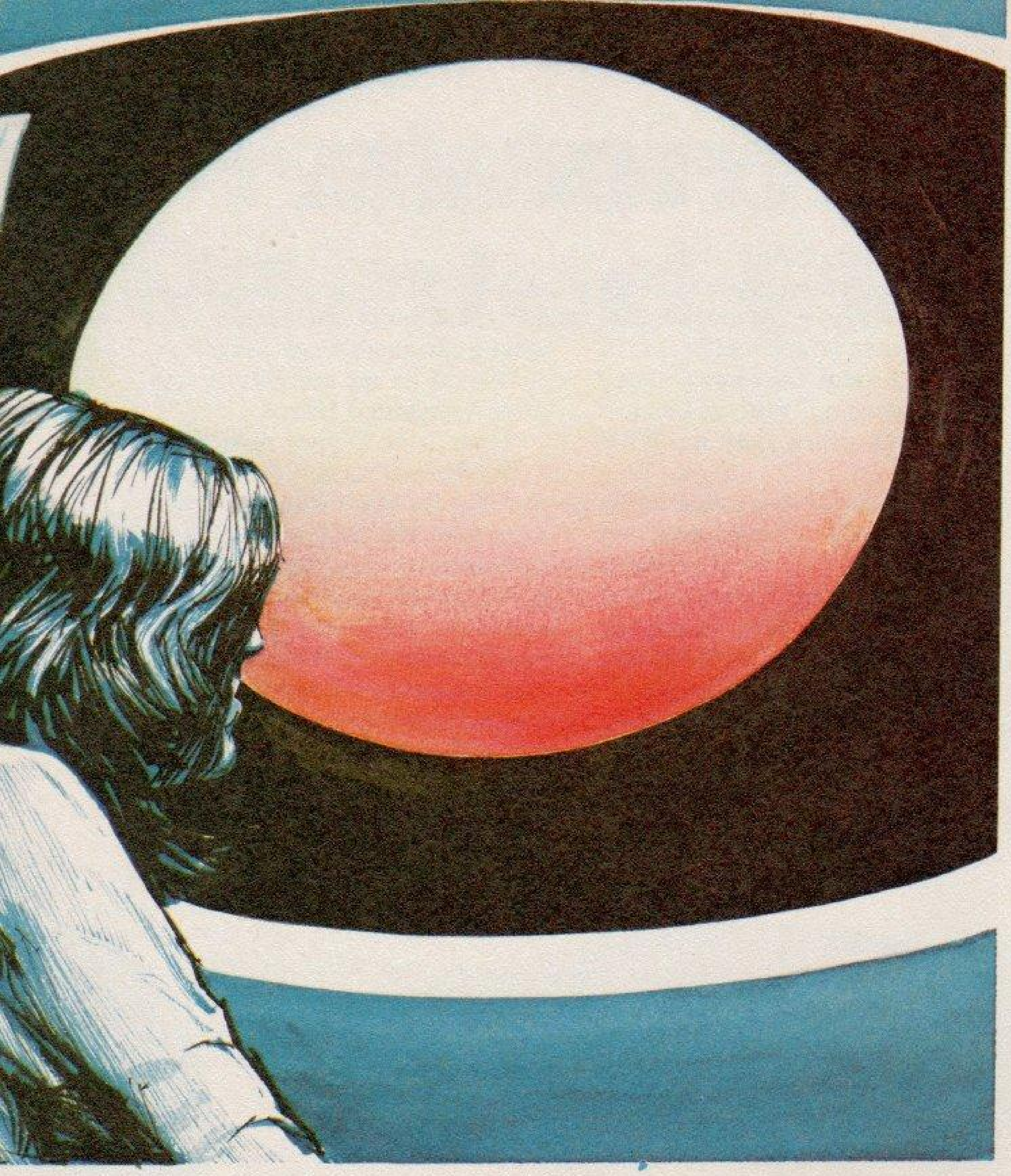
"You had better strap yourselves in," the Doctor commanded. "I've a feeling we are in for some more turbulence. But what's causing it I *can't* say."

"Could be air currents, I suppose," suggested Harry.

"True," the Doctor replied.

But before he could continue, the Tardis was whipped away starboard at a dizzying rate, and nothing he could do at the control panel could stop it; the time machine was about as effective against whatever force of attraction propelled it, involuntarily, through space and time—and right away from Phenolyadron, its destination—as a mite of dust





sucked up the tube of a brand new vacuum cleaner.

After a bit the turbulence stopped—though the Tardis was still wildly off course.

The Doctor stared anxiously into the viewing screen, then at the year dial—which was whizzing speedily into the future. He mumbled, intermittently, as he recognised certain planets and asteroids—though, with the speed, it was a miracle he did so.

"Asteroid 702 . . . 704 . . . Lucila . . . Yaxipholox . . . Venodrux . . . Zeophelazar . . ." But after a time he barked at the screen; then gaped, with the dismayed countenance of a bloodhound that has lost the trail and is completely lost.

Harry and Sarah, now firmly strapped in their seats, felt distinctly queasy and so were without comment or suggestion, indeed without a word between them.

After some more dumbfounded staring into the viewing screen, the Doctor said, defeatedly: "It's just *incredible*. I can't control the Tardis at all. It's no use! I'll just have to sit around, like a baby in a pram, waiting to see what happens; for the truth is, I'm quite as helpless."

An hour later the Tardis was still being vacuumed, as a mite of dust, but then it began to slow down, and as it did so—through the easing off of the magnetic force—it juddered on every side, rattling its passengers' teeth mercilessly, a sound like crushed ice jigging in a cocktail-shaker.

An unknown planet loomed left of the screen, then blotted out its centre.

"Oh, no!" Sarah exclaimed, her heart racing. "We're going to collide!"

But the Tardis did not; instead, there was a terrifying twang, then the sound as of ropes being pulled tightly round it; several small, innocuous bounces and . . . stillness at last.

The Doctor looked into the viewing screen once again, and blinked.

"What are *those*?" he exclaimed.

Sarah and Harry rushed over.

"*Ugh*—spiders! Never could stand them," Sarah remarked. "When I was a kid I'd scream my head off if I saw one in the corner of my bedroom!"

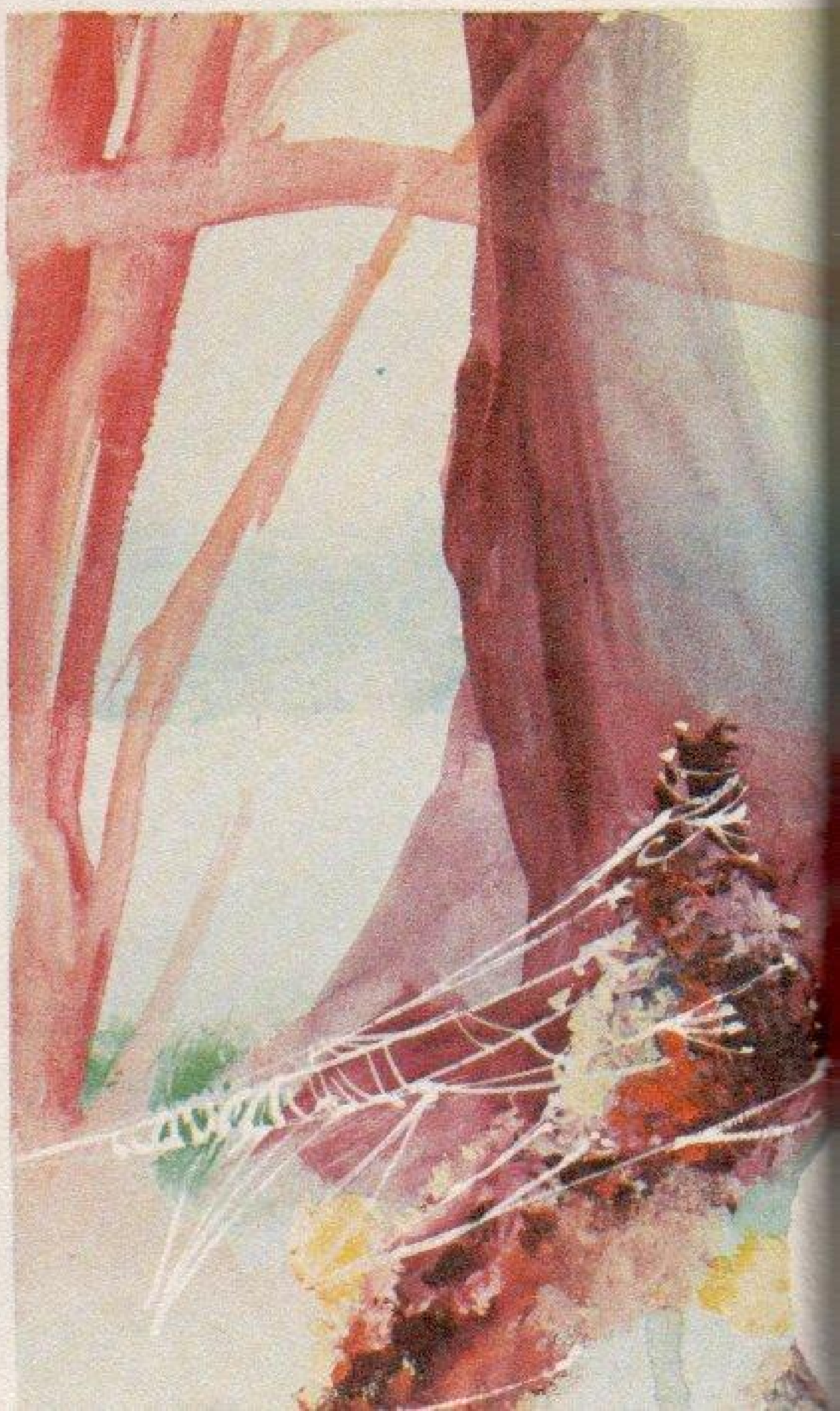
Harry gaped. "Horrific!" he said.

The Doctor peered at the screen more closely.

"Spiders—don't *think* so," he mumbled. "No . . . look! They are much more complex beings. Obviously they show certain spidery characteristics—observe the massive webs all over the place! But scrutinize them *properly*. Don't you think their . . . er . . . bodies—or whatever name we care to give them—are more like enormous *eyes*?"

"Eyes?" murmured Sarah, feeling repelled, fascinated, mesmerised by this inconceivable form of life. "Why, Doctor, I think you're right."

Harry glanced at the year clock.



"Blimey, Doctor!" he exclaimed. "It's AD 3872! We are *really* ahead of ourselves this time."

The Doctor pointed to the viewing screen.

"Noticed anything special *about* the eyes, Sarah?" he asked.

"Let me see. Well, they dilate and contract as ours do, but with each dilation they emit different-coloured rays," Sarah replied. "It's the way the creatures communicate with one another perhaps!"

The Doctor thought Sarah's guess was probably correct.

He pushed open the door of the Tardis and swung himself down on to the strange planet by the stout, rather elastic silken threads of a giant web.

"It's easy!" he called to the others.

His feet were lost now in a bluish-grey grass in which massive, wild, saffron-coloured orchids grew, giant tiger lilies, and many blooms as he could not have named had his life depended upon it.

Gingerly, Sarah and Harry followed his example.

"A home from home!" Harry announced wrily. "I *don't* think."

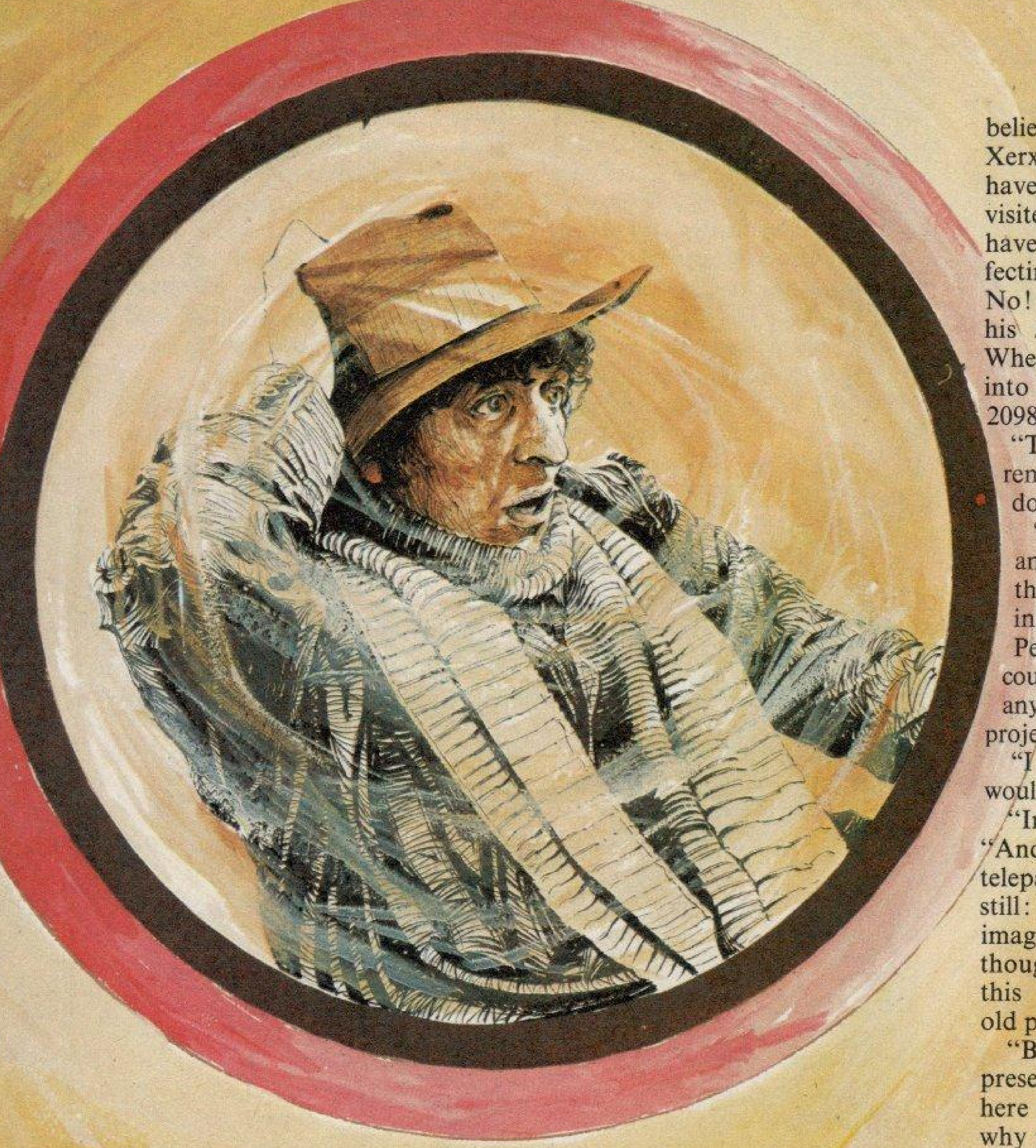
Now the three time travellers stretched their aching legs, rolled their heads round in gratifying circles, and shook the aches and pains from their arms. But before they had discussed any plan, they were amazed to hear beautiful music, a sound like winds blowing through many gaps and crevices on a bleak moor—but more intricate, more harmonious. And next they were lifted, as easily as pigeon-feathers, right off their feet, and were drawn gently but firmly by a powerful crimson magnetic ray, towards the biggest 'eye'.

Its pupil dilated enough to let them pass through with ease. And now the Doctor and his companions found themselves in a tunnel, rather like a windtunnel at a fair, which propelled them along a psychedelic corkscrew, towards the centre of this unbelievable creature of the year 3872.

After the extremely breezy, twisting tunnel, the large central chamber the Doctor, Sarah and Harry found themselves in now seemed relatively peaceful.

The chamber was obviously the brain of the creature: its walls were veined, a greenish blood could be seen flowing through the veins. And circling the central chamber were smaller ones, each with its own particular transmitting job to do; the signals varied in speed and pitch.

But after further investigation, the Doctor found many other



organs or chambers in the creature, each with its own specific purpose, as in a human body, or a spider's.

"So it's much more than just an eye, Doctor," Sarah whispered.

"Of course," the Doctor replied. "Who ever heard of an eye surviving by itself? No. The creature has an advanced digestive system, a breathing apparatus, rather similar but more complicated than ours, and an intricate recording and transmitting mechanism—a brain—which looks to me very evolved indeed!"

"And look at *this*!" Sarah exclaimed excitedly, rushing over to a scintillating screen—something like a huge television screen.

"*Mmm.* Most interesting!" the Doctor replied. "Could be the creature's retina . . . or a kind of memory screen. A sort of interior cinema where the brain shows old films!" He laughed. "You know what I mean—clips of past experiences—that kind of thing! Yes, I'm *right*."

The time travellers watched 'the film show' eagerly.

After several minutes the Doctor could contain his excitement no longer, and exploded: "I can't believe it!—it's old Periopolos. Xerxes Periopolos, whom I haven't seen for *ages*. Last time I visited his lab in Athens—it must have been in 2096—he was perfecting his astralfuturo-rocket. No! I'm forgetting! Forgetting his *success*. Let me see now? When was it? Ah, yes. I bumped into him on Phenolyadron in 2098."

"That's where *we* should be," remarked Sarah. "What was he doing there?"

"He was researching its fauna and flora. Partly, that is. But *I* think he was much more interested in the Salamander People—marvellous folk, who could obtain sustenance, indeed anything they desired by thought-projection . . ."

"I can think of times when *that* would be *useful*!" Harry said.

"Indeed!" said the Doctor. "And needless to say they were telepathic. But more interesting still: they were able to project an image into a camera, at will—thoughtography, it's called—and this particularly fascinated my old pal Periopolos!"

"But to come back to the present—I mean, to *this moment*, here and now. Can you tell me why your friend the Greek is being shown on this creature's memory screen? It seems very strange, don't you think?" asked Sarah.

"True!" the Doctor replied. "But let us be patient and watch. We may discover the reason, any minute now!"

Sure enough they did. After several clips of Xerxes Periopolos in his Athenian laboratory with his astralfuturo-rocket in model form, the memory screen told quite a story! How the rocket was finished; how Periopolos visited the planets Lucila and Venodrux—both very friendly places indeed, for the Doctor's old pal was seen dancing the Glubja-roo with the graceful Lucilians and then playing Contortulus, a crazy kind of rugby-football, with the Venodruxians, who looked like fluorescent octupi.

But that wasn't all the awed time travellers saw! Soon they observed the astralfuturo-rocket landing on the very planet on which they themselves were ensnared.

Professor Periopolos stepped out of the rocket along with eleven crew-members and they stalked through the bluish-grey grass, with the wild orchids and giant tiger lilies towering round them.

Then there was a blank: as though to show a time-interval. And next they watched an amazing thing: the remarkable mutation, or change, of Professor Periopolos and his friends, into the fantastic creatures who were now the planet's principal inhabitants, and in one of whose brains the Doctor and his friends were now encapsuled.

"Quite incredible!" the Doctor ejaculated. Then, bringing his boggling mind sharply back to the year 1977 by a tremendous effort of will, he said: "I wonder what year the Professor's launching will take place? I do hope his large, energetic family will be grown-up and married when it does!"

"Oh, yes, that would be *awful*," said Sarah.

"You mean—should he leave all his kids behind?" questioned Harry.

"Yes," Sarah replied. "But Doctor... does it *have* to happen?" she pleaded.

"Now, there's a thought," the Doctor replied. "Perhaps it *doesn't*. Though who am I to try and tamper with the future? Still I could perhaps manipulate the year-mechanism of the Tardis. Yes. A great idea, Sarah! I'll *do* it. That's if we can get out of this creature without too much difficulty!"

A quick 'THANK YOU' flashed across the memory screen.

The Doctor suddenly apprehended that the device transmitted not only memory flashbacks, but immediate-thought-imagery, and now, *communication* was a practicable proposition! So he thought he'd ask his poor mutated friend a few questions.

"Hello there, Xerxes!" he said. "What is the name of this planet that's become your second home? And what biological name have you given to this remarkable mutation that makes you totally unrecognisable?"

"Sorry, old friend!" the screen flashed. "But this is the planet PERGROSS. And we are Eye-Spiders; by name—the Shioheng. We spin webs as spiders do with the liquid in our rather-similar

glands, and we feed mainly on golden helio-flies and blue-veined lepideptorix. However—your idea. It is *wonderful*. How soon do you think you will be able to help us?"

"Very soon, I should think," the Doctor replied.

"Then—*do* hurry. I am longing to get back to the year 3000, when our launching took place, so as to see Maria, my wife, and all my lovely children again!"

The Doctor, Sarah and Harry soon found the breezy corkscrew-tunnel again and very soon were whooshed out-of-doors, ejected by the massive pupil of the Shioheng.

While the Doctor did his calculations in the Tardis, Sarah and Harry explored Pergross and saw for themselves the Eye-Spiders spinning their webs; but after some time, the Doctor shouted them back to the time machine and they were able to watch for themselves the year dial whizzing backwards to 3000.

It was a tale of a succession of seasons and of the whole evolution of the Shioheng—but in reverse. They saw Professor Periopolos and his colleagues walking backwards into the astralfuturo-rocket . . . and then the Doctor stopped the year dial, and pressed various buttons.

And now he strode jubilantly outside.

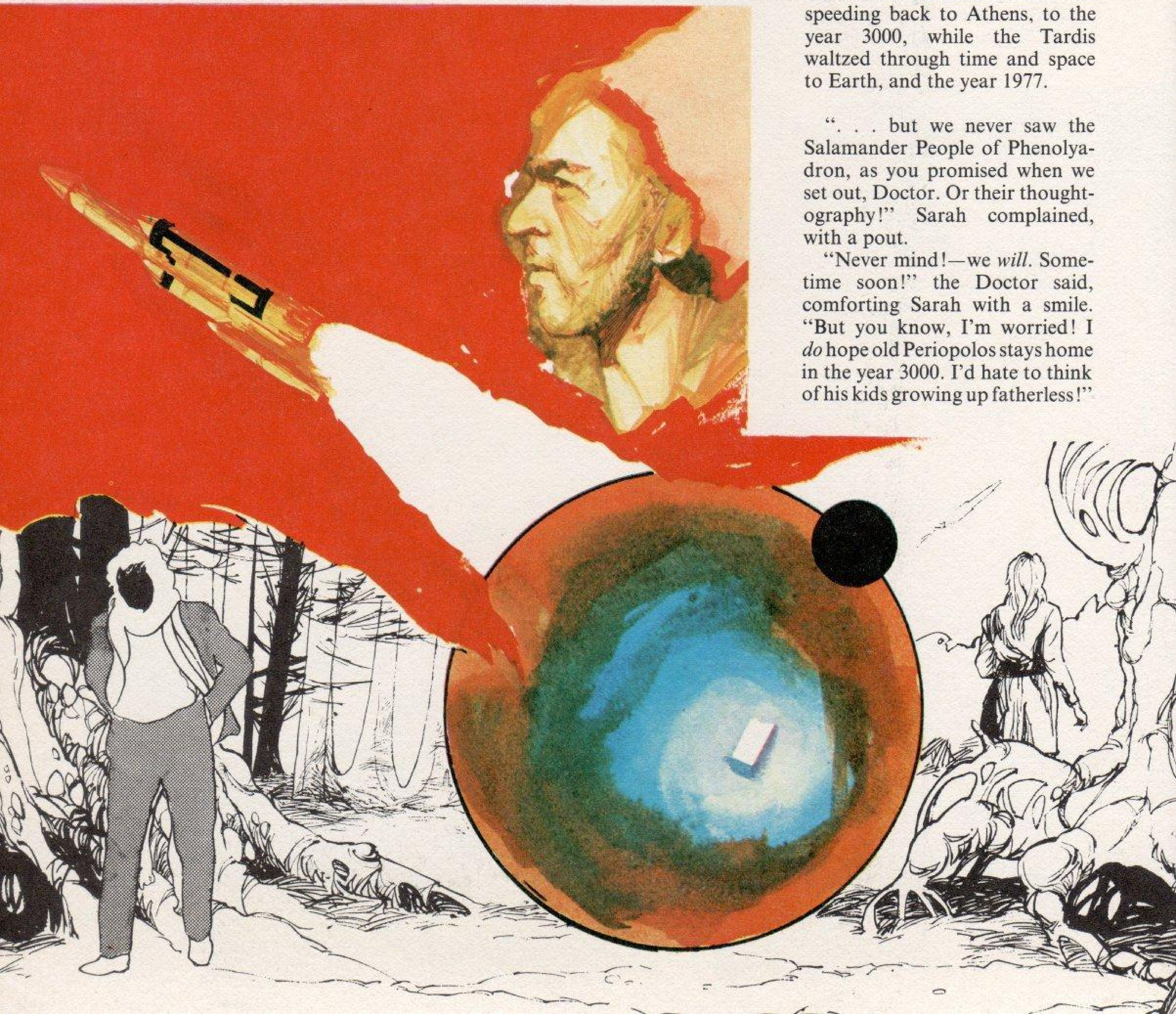
"Xerxes, welcome!" he called loudly, rushing over to his friend, who was surrounded by the eleven other crew-members. "What a relief it is to see you in that familiar, plump human shape!" The Doctor embraced the Professor warmly. "And, my friend, you *will see* your family grow up to maturity. *This*, I prognosticate!" he added.

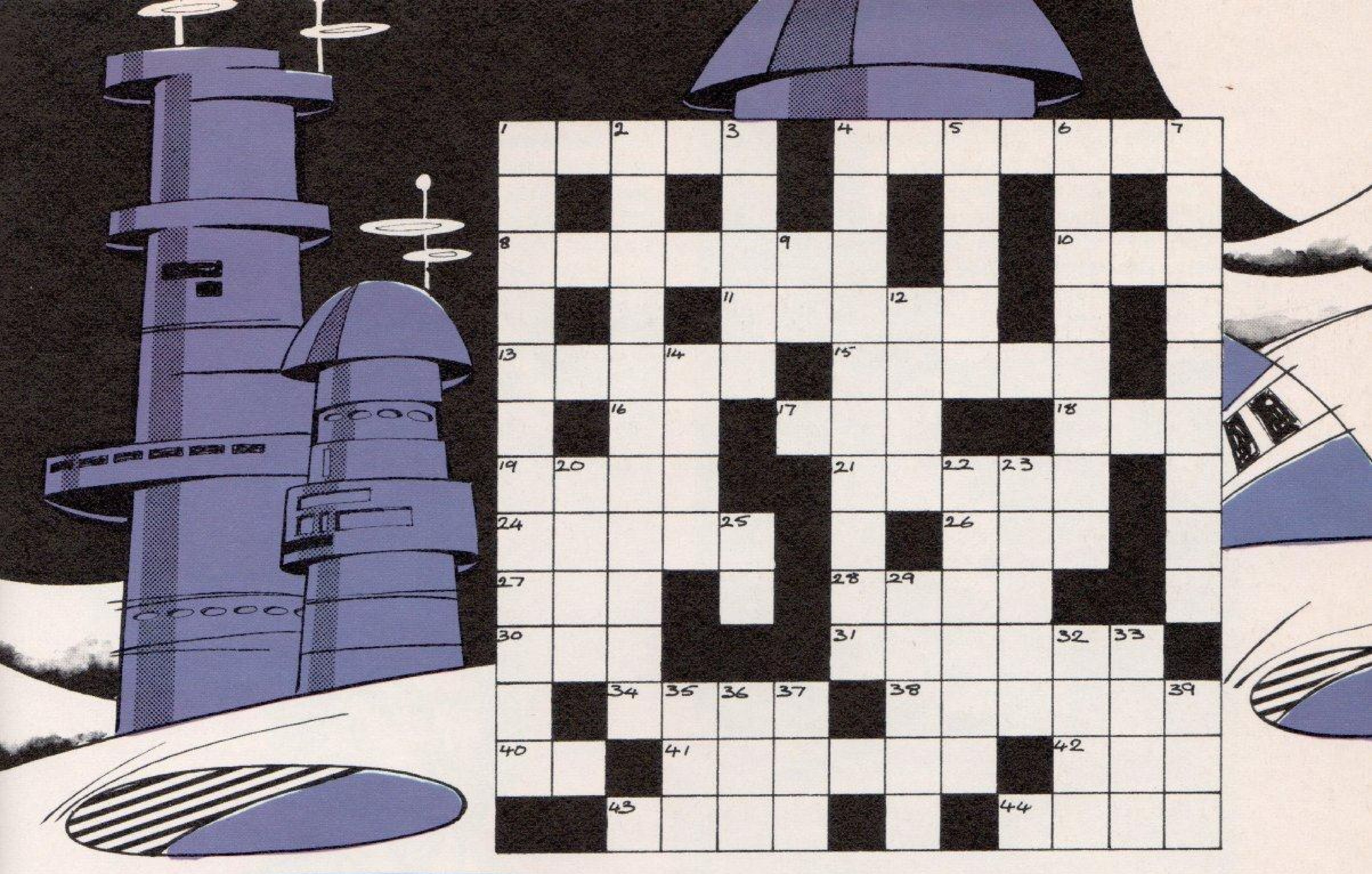
Professor Periopolos guffawed. "I must admit I was getting rather bored being one of the Shioheng—in spite of their evolutionary superiority! And I *much* prefer stuffed vine-leaves and a bottle of Athenian wine to the taste of helio-flies and lepideptorix—though they *are* less fattening!" he joked.

After a deal of reminiscing about old times, the two friends bade one another goodbye, and soon the astralfuturo-rocket was speeding back to Athens, to the year 3000, while the Tardis waltzed through time and space to Earth, and the year 1977.

". . . but we never saw the Salamander People of Phenolyadron, as you promised when we set out, Doctor. Or their thoughtography!" Sarah complained, with a pout.

"Never mind!—we *will*. Sometime soon!" the Doctor said, comforting Sarah with a smile. "But you know, I'm worried! I *do* hope old Periopolos stays home in the year 3000. I'd hate to think of his kids growing up fatherless!"





Dr. Who's Crossword

clues across

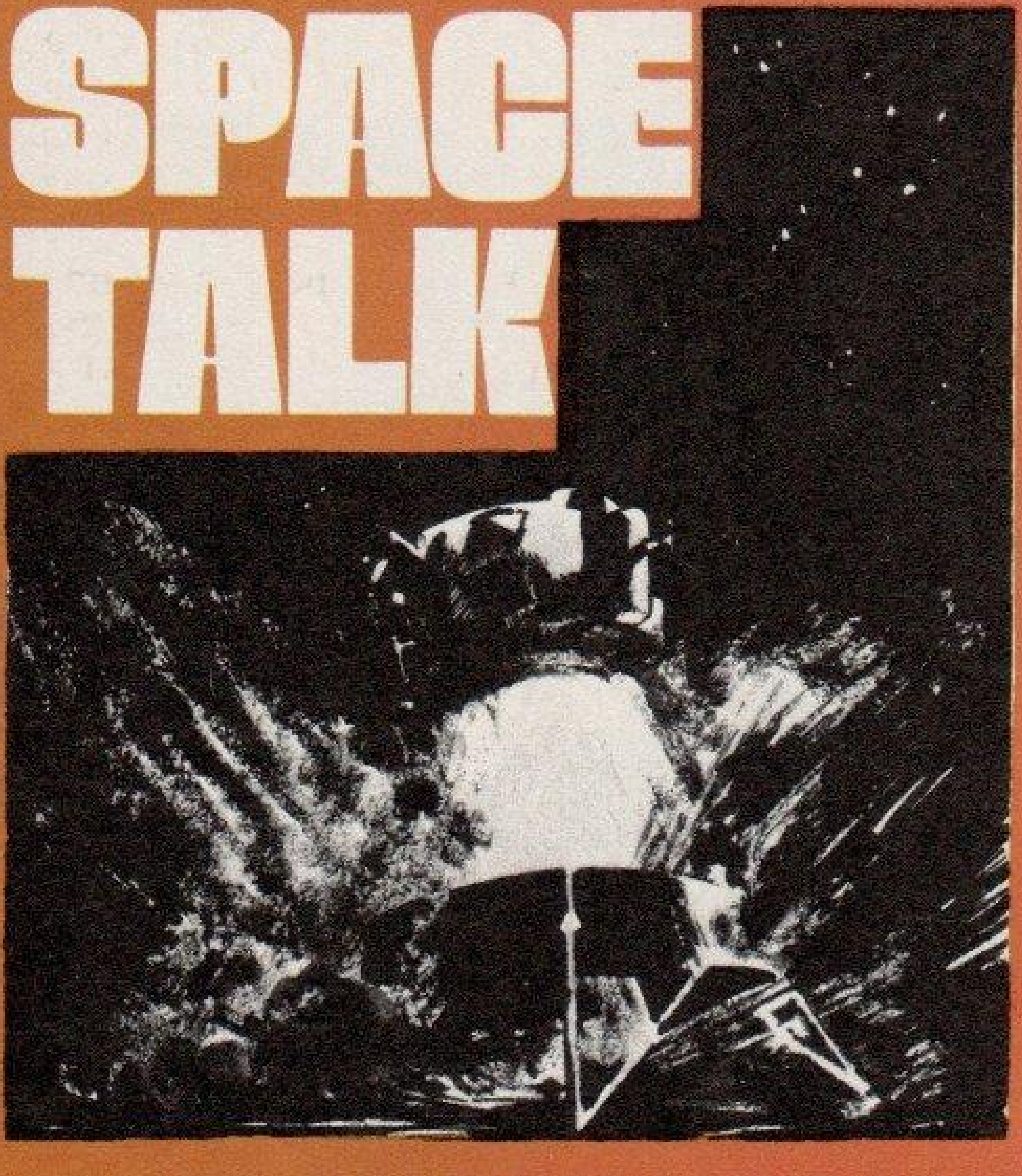
1. A metallic mixture. (5)
4. A system that numbers in tens. (7)
8. Ragged clothing. (7)
10. To equip a ship. (3)
11. This is what you are supposed to do at school. (5)
13. A circular song? (5)
15. This fruit goes well with cream. (5)
16. In such a manner. (2)
17. Our ancestor? (3)
18. One of many. (3)
19. Head of the Roman Catholic Church. (4)
21. This meat looks almost as bad as it sounds. (5)
24. A few of 20 down. (5)
26. The whole amount. (3)
27. Waves do it against the shore, but you can sit on it as well. (3)
28. The term by which you are known. (4)
30. A Spanish exclamation. (3)
31. Drinking will cure this. (6)
34. It means that there aren't many about. (4)
38. Goes in. (6)
40. Old English you. (2)
41. Ice-cream delight. (6)
42. An extra-long member of the fish family. (3)
43. A good place for tools. (4)
44. A hunting animal's victim. (4)

clues down

1. The study of man. (12)
2. Acid or alkaline? This will tell you. (6, 5)
3. Give in. (5)
4. To let someone down. (10)
5. A fragile country? (5)
6. This man's word is law in the Wild West. (8)
7. A measurement of distance for stars. (5, 4)
9. Concerning. (2)
12. Outcrop of rock in the sea. (4)
14. Christmas greeting. (4)
20. A milky, green and red gem stone. (4)
22. An extremely bad food shortage. (6)
23. Watchful. (5)
25. As 16 across. (2)
29. In front. (5)
32. A prophet, soothsayer. (4)
33. Money won't grow on it. (4)
35. A member of 33's family—charred? (3)
36. Regret. (3)
37. Finish. (3)
39. Artful; cunning. (3)

Check your answers on page 76

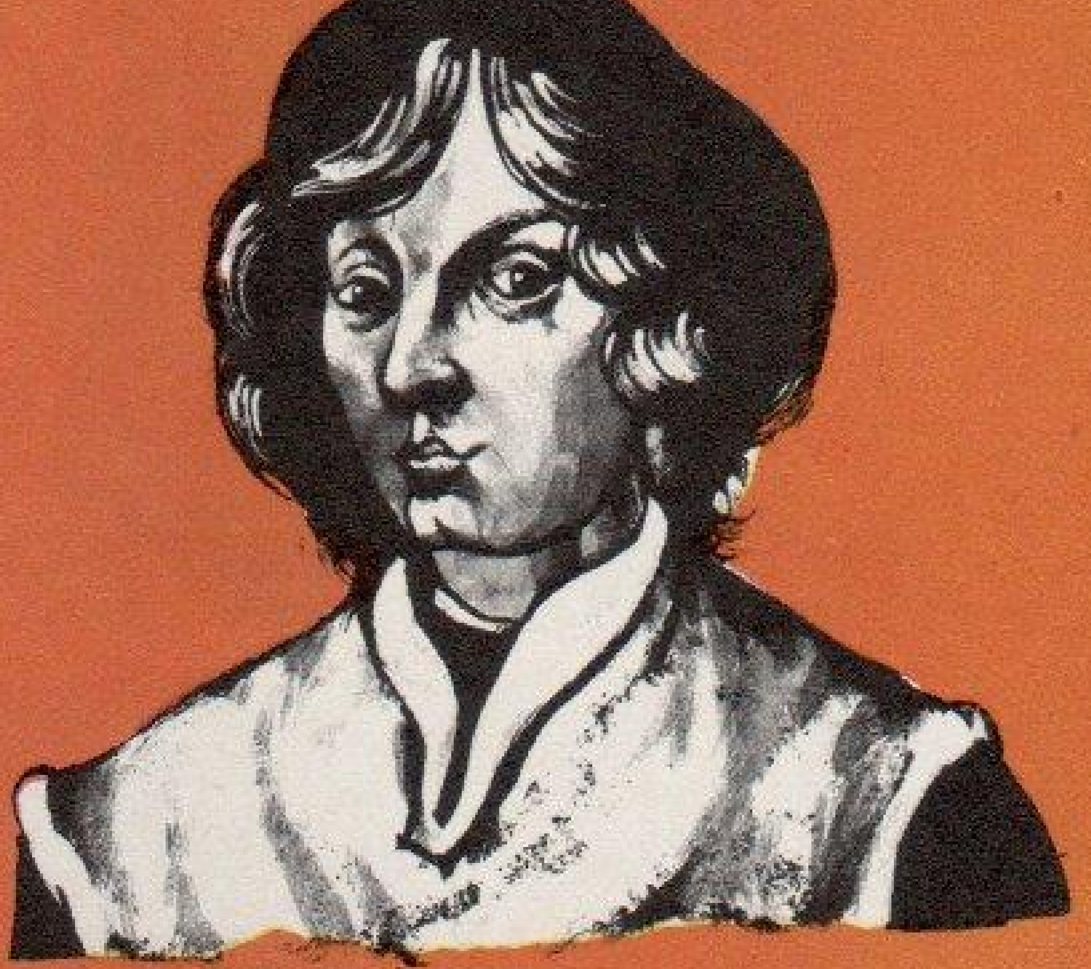
SPACE TALK



Space travel research into rocket exhaust blasts has helped with a problem down here on earth. Intensely powerful hot blasts are used in mining, where there is a very hard layer of rock to be drilled through. It is called 'jet drilling', and the sudden concentrated heat makes an area of rock crumble. The crumbled rock is removed and explosives are put into the hole for blasting.

The first treatise on space travel was written in 1903 by the Russian mathematician Konstantin Ziolkovsky. He was the first person to suggest the possibility of using liquids as propellents, instead of explosive powders.

A scale of everyday objects is a useful illustration of the comparative sizes of the planets—if not an entirely accurate one! If Mercury and Pluto, the two smallest planets, were each about the size of a pinhead, then Jupiter, the largest planet, would be about the size of a golf ball. Saturn would be about the size of a table tennis ball, and Neptune and Uranus about the size of marbles. Mars, and then Venus and Earth, would come above Mercury and Pluto on this scale.



Nicolaus Copernicus showed that the Sun is the centre of the solar system and that the Earth revolves around it. The great Polish astronomer made his observations in the early 1500s, and before that no one had believed that the Earth was a planet—astronomers were confident, in fact, that the Earth was the centre of the universe. Copernicus's discoveries, you could say, really brought them down to earth. . . .

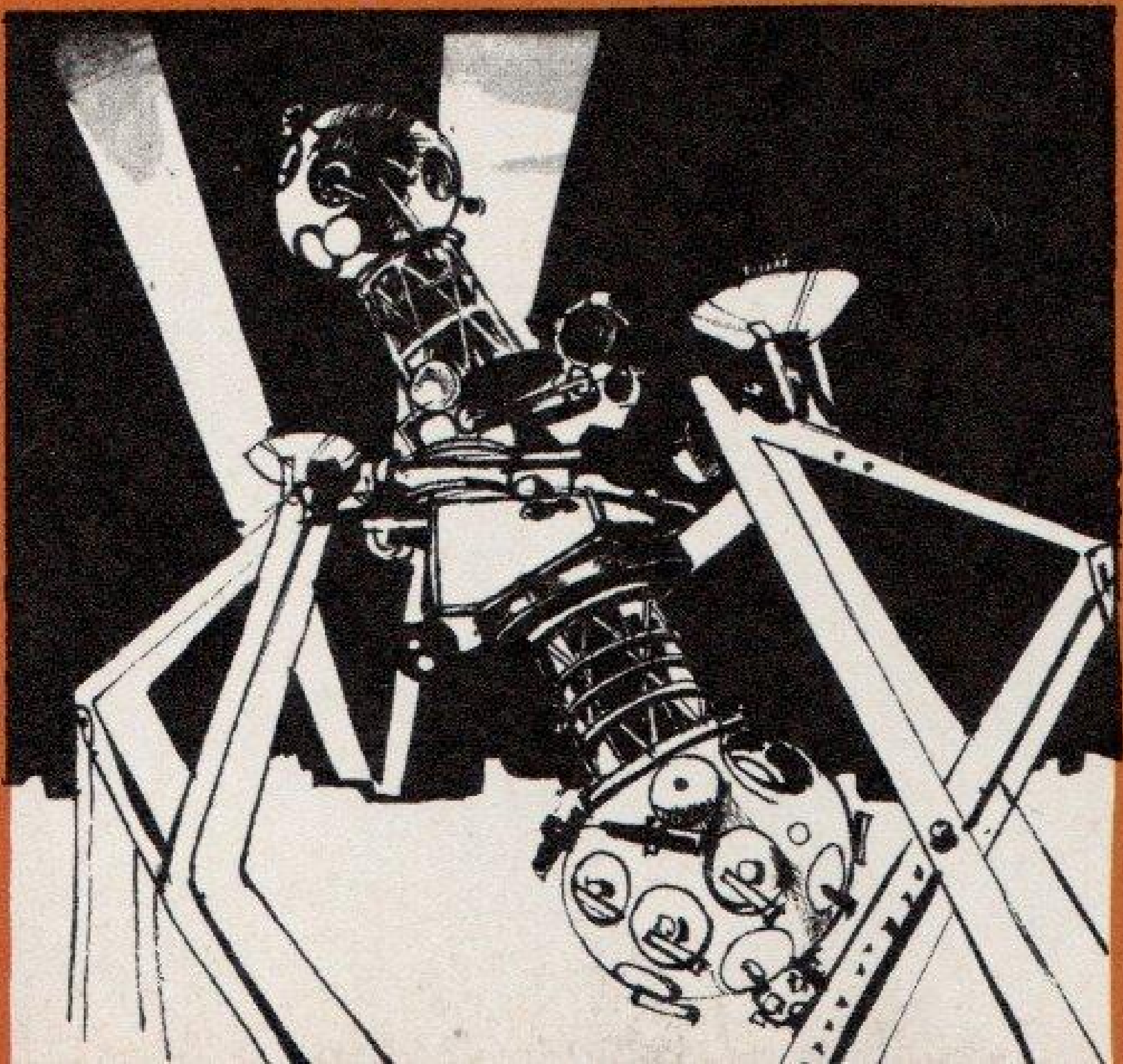
The temperature on the surface of the Sun is about 10,300 degrees Fahrenheit, and at the centre this probably rises to nearer 50,000,000 degrees Fahrenheit.

The first 3-man space flight was launched by Russia in 1964. Called Voskhod 1, it carried the first medical doctor and the first scientist to travel in space. The spacecraft made 16 orbits in just over 24 hours.

Nobody knows how many stars there are in space—the number is so vast that it would be impossible to calculate. There are probably 100 billion stars in the Milky Way Galaxy alone, and there are several billion galaxies in space. About 5,000 stars are visible to the naked eye from the Earth.

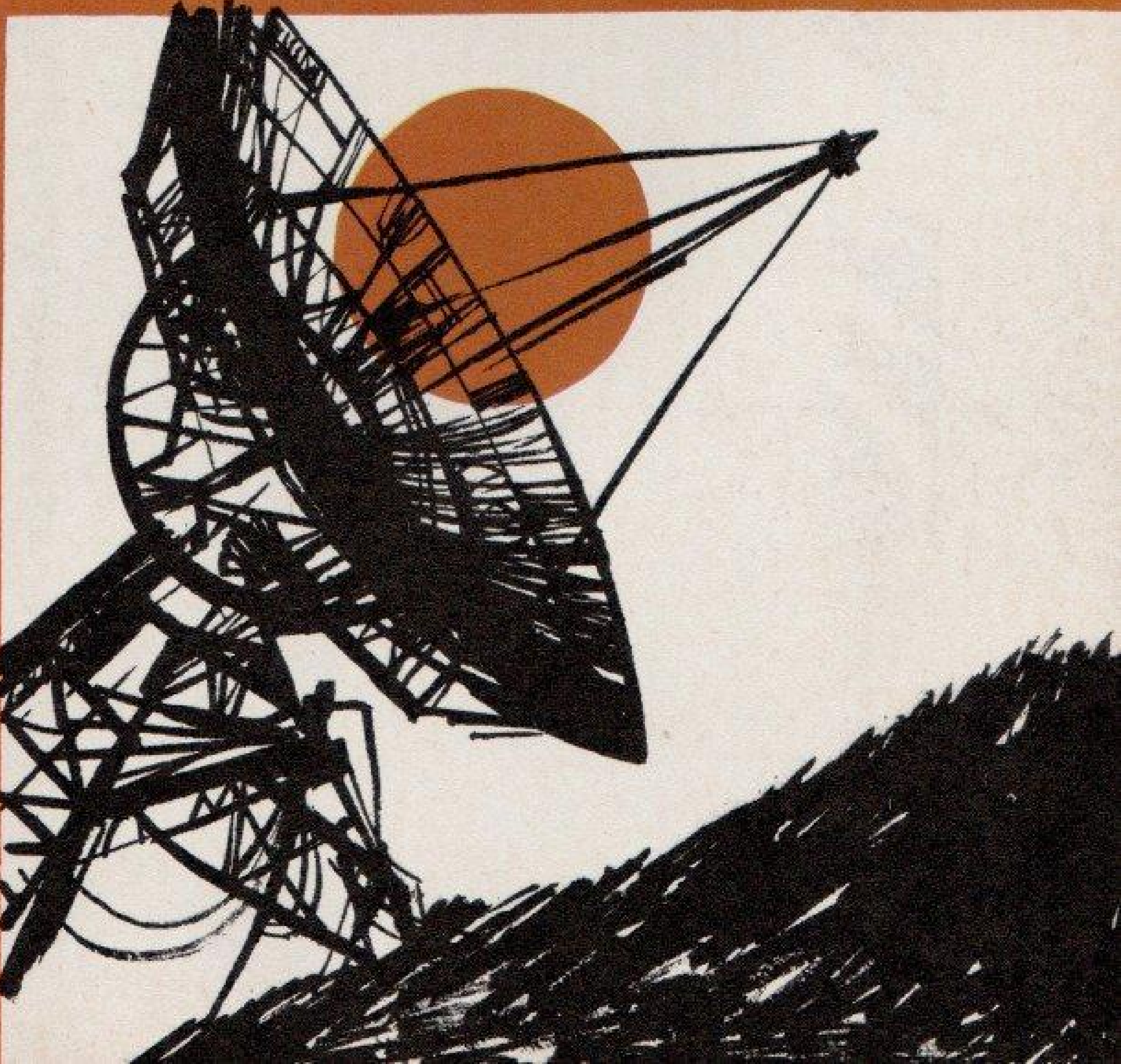
There are five planets which can be seen from Earth without a telescope. The closest is Venus, which is about 100 times as far away as our Moon. Venus looks like a very bright star. The farthest away of the five is Saturn, which is about 800 million miles away from us. If we were to fly there in a vehicle travelling at a steady 1,000 miles per hour, the journey would take about a hundred years.

The giant Zeiss Universal Projector inside the famous London Planetarium can show the images of 9,000 fixed stars on the roof inside the dome, as well as the Sun, Moon and planets. The projector weighs about two tons and it is made up of 29,000 individual precisely accurate parts.

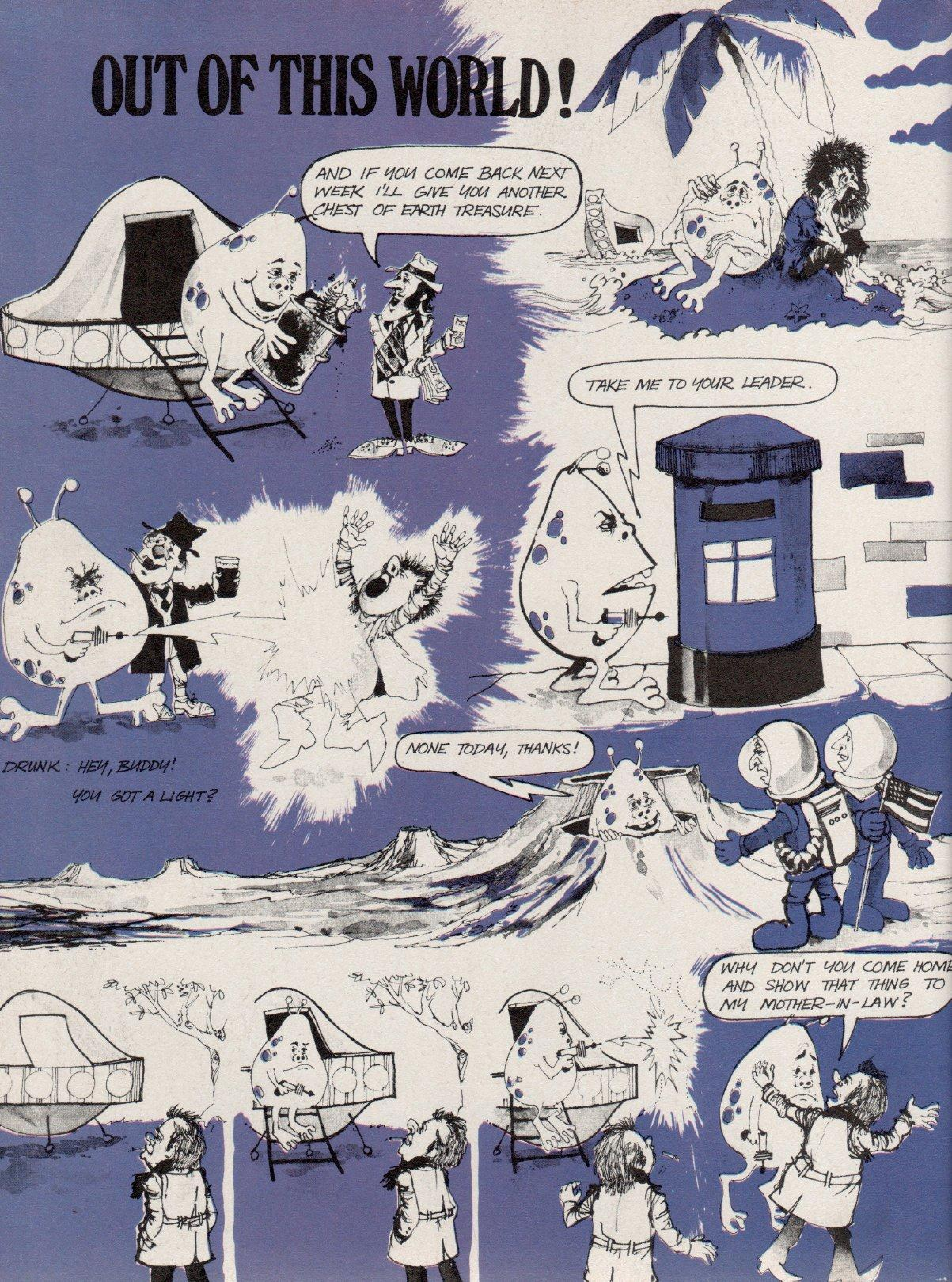


Where did the Moon come from? This is one of the big questions that has always been asked in the study of space. One theory was that at least 4 aeons ago—one aeon is 1,000 million years—there was one large mass in a semi-molten state. The theory explained that another body in space may have passed very close to it at this stage, and that the gravitational pull from this body tore it apart. It was believed that the mass separated into two large parts—the Earth and Mars—and one small part—our Moon. Rock samples brought back by the Moon explorers, however, have cast doubt on this theory—and so the question remains.

Asteroids are minor planets, and are much smaller than the planets of the solar system—some of them are only about a mile in diameter. The orbits of the planets Mars and Jupiter are so far apart that scientists once thought there must be another planet between them. Careful study by telescope and camera revealed not one planet, but hundreds of minor planets. Since then many other asteroids have been found, but the majority are between Mars and Jupiter.



OUT OF THIS WORLD!


AND IF YOU COME BACK NEXT WEEK I'LL GIVE YOU ANOTHER CHEST OF EARTH TREASURE.
TAKE ME TO YOUR LEADER.
DRUNK: HEY, BUDDY! YOU GOT A LIGHT?
NONE TODAY, THANKS!
WHY DON'T YOU COME HOME AND SHOW THAT THING TO MY MOTHER-IN-LAW?

DRUM BEAT IN SPACE

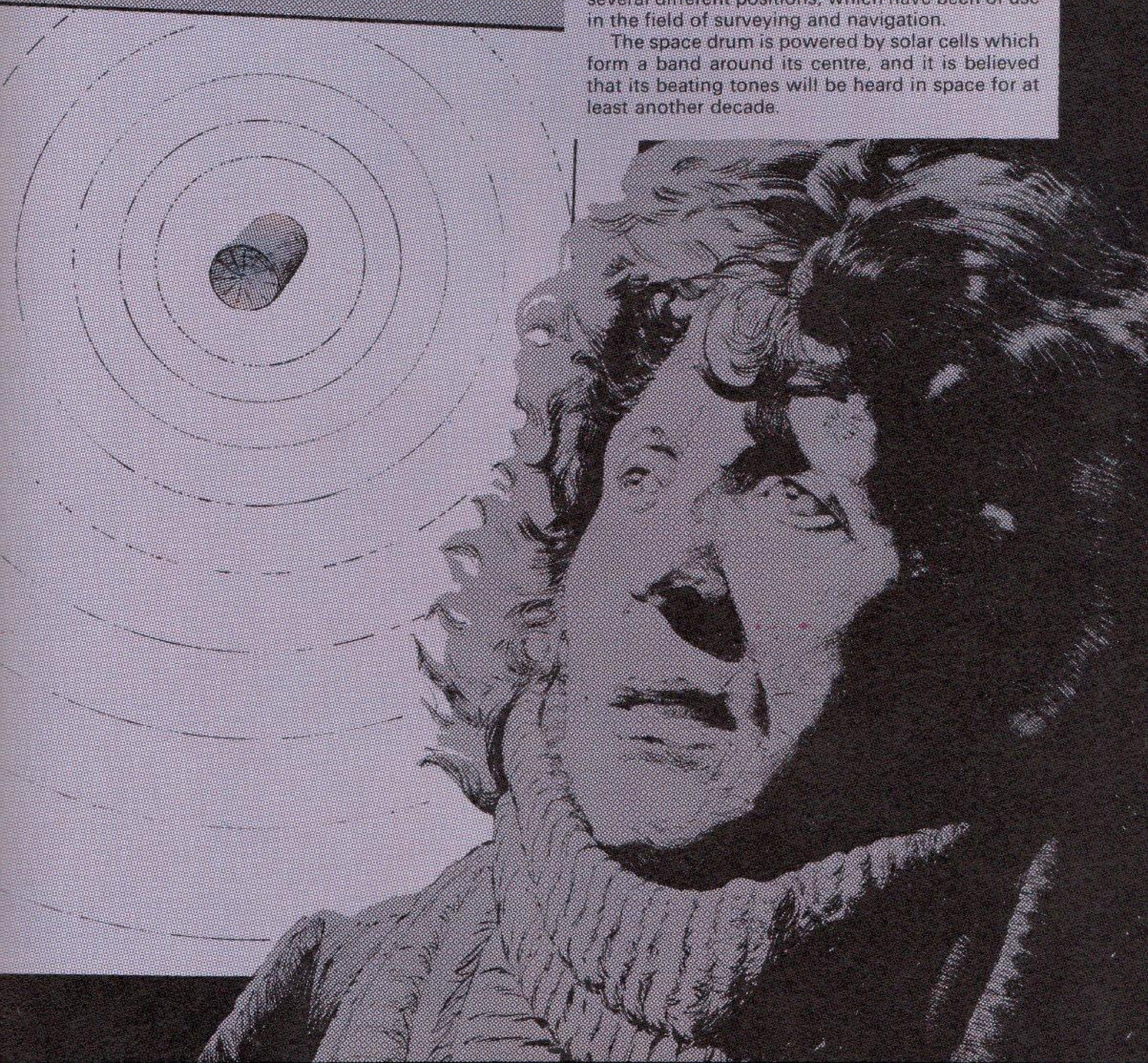
Dr. Who and his companions have encountered many strange people and objects in space, but one of the objects he *could* actually encounter today is a drum which beats continuously as it orbits around the sun.

This drum is no figment of the imagination either, for it has been in orbit for some ten years now. The drum is known to American scientists as *Pioneer-6* and when it was launched a decade ago it was meant to give advance warnings of radio blackouts on earth caused by impending solar storms.

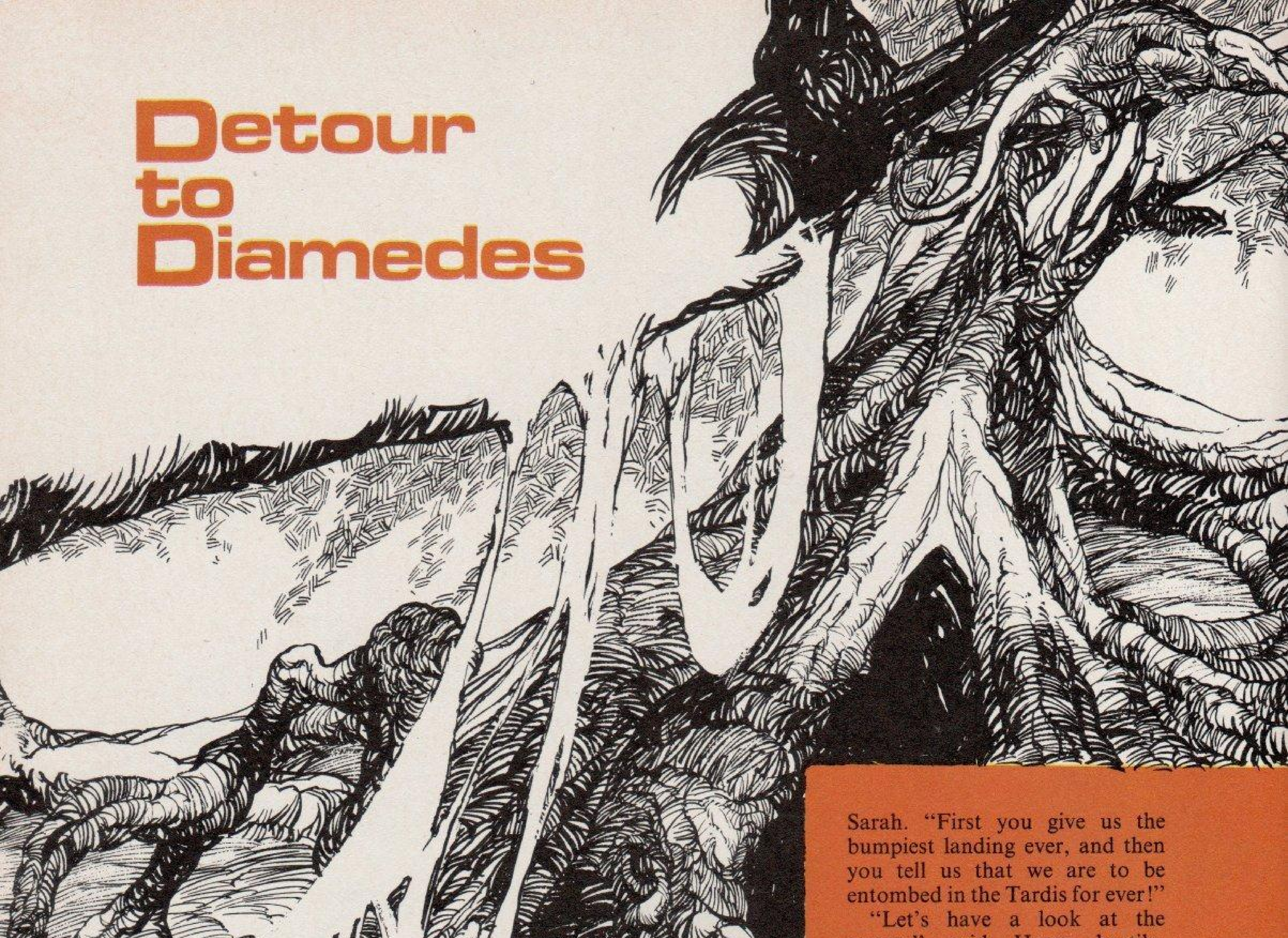
The Ames Research Centre in California are delighted with their space drum, which regularly sends back information on solar weather reports which are of great value to military and civil associations alike.

It is used for measuring the solar corona, a fiery halo, and measurements have been recorded from several different positions, which have been of use in the field of surveying and navigation.

The space drum is powered by solar cells which form a band around its centre, and it is believed that its beating tones will be heard in space for at least another decade.



Detour to Diamedes



"Won't be long now," said the Doctor. "I expect you two will be glad to see the old home ground again after all this time."

"I'll say!" said Harry fervently. "And the first thing I'm going to do is have a good old English cuppa!"

The Doctor was about to give his own opinion of that particular beverage when suddenly the Tardis lurched to one side, throwing the three travellers onto the floor. For a moment the time machine seemed to go completely out of control, swaying first to one side and then to the other, and then suddenly it tilted sharply and stopped.

"You are losing your touch, Doctor!" grumbled Sarah, rubbing her bruises. But the Doctor wasn't listening.

"That's very strange!" he murmured, fiddling with the controls. Then he looked at Harry and grinned. "I'm afraid you'll have to wait for that cuppa—I can't open the door!"

"Oh, that's marvellous!" said Sarah. "First you give us the bumpiest landing ever, and then you tell us that we are to be entombed in the Tardis for ever!"

"Let's have a look at the screen," said Harry hastily. "There might be a simple explanation for all this."

Sure enough, the picture on the screen explained both the bumpy landing and the fact that the door wouldn't open. The Tardis had landed in a tree. Not an ordinary tree, but a huge mass of black, tangled branches high above a steaming swamp.

"Well now, that's very interesting," mused the Doctor.

"That's not quite the word I had in mind!" said Sarah tartly. "More like a catastrophe!"

"We do seem to be a bit off course, Doctor," said Harry. "Where are we, the Amazon jungle?"

"Actually, we are more than a bit off course," replied the Doctor, and for once he had the grace to look sheepish. "I, er, I seem to have miscalculated slightly, and we have landed on another planet."

Before anyone could comment on this piece of news there was a sudden commotion outside, and a sound of splintering wood. "I do believe that we are about to be rescued," said the Doctor calmly, and, as the obstacles outside were removed, the door of the Tardis swung slowly open.

They caught a brief glimpse of the strange jungle outside before the light was cut off by a massive, coppery-green creature who stood in the doorway.

"Doctor!" shrieked Sarah. "Close the door quickly!"

But, to her amazement, the Doctor just stood there calmly as the huge thing shuffled towards him, making strange high pitched sounds as it did so.

"Don't worry," he said, as a pair of powerful arms lifted him off the ground and flung him over one shoulder. "I don't think they mean to harm us."

"They?" thought Sarah wildly, and saw to her horror that two more of the creatures were heading for herself and Harry. . . .

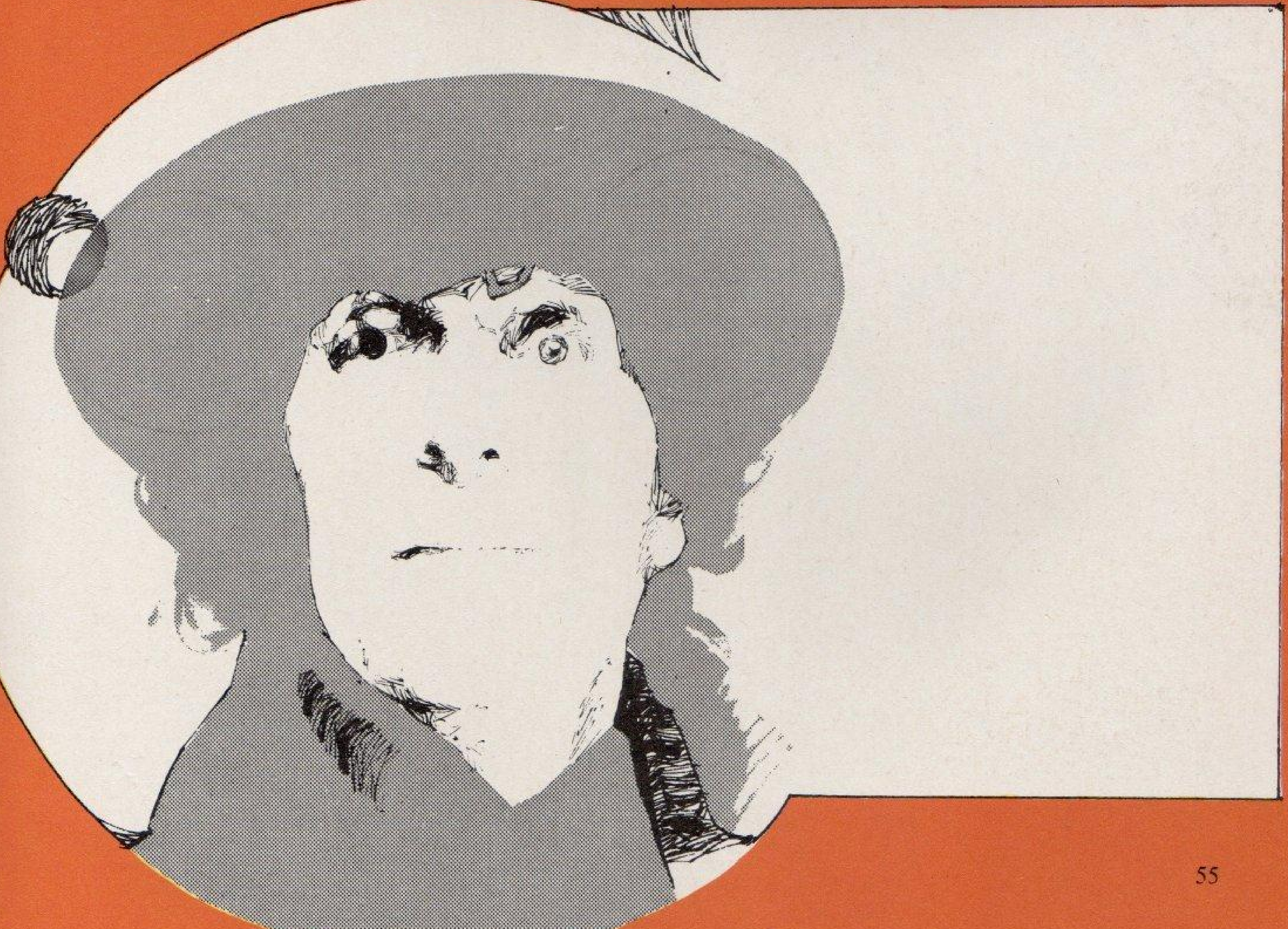
The journey that followed was one of the strangest they had ever experienced. The huge black trees seemed to go on forever, and their twisted branches made a network of pathways through the copper-coloured foliage. Below them was the swamp, where the opaque green liquid belched up pure ammonia gas in huge bubbles, and occasionally a grey, shapeless mass would rise to the surface to breathe, making low moaning sounds.

Sarah shivered, and clung more tightly to the coppery-green fur of her captor. Her ribs ached from the continual bumping against the creature's shoulder, and she tried to ease herself into a different position. Behind her she could hear Harry trying to persuade his companion to let him walk for a while, and although she couldn't see the Doctor, she knew that he would be taking in his surroundings, and storing it all in his remarkable brain.

She wondered briefly what colour the sky was, and whether the planet had a sun of any kind. There was some light certainly, but it seemed to come from the fluorescent swamp rather than any celestial body.

"I would say," said the Doctor suddenly, "that this is the planet of Diamedes, and that these creatures are the Slodes, in which case you needn't worry about them harming you. They are very gentle, but rather slow-witted. As for those nasty grey lumps in the swamp, they are Carks, and I would advise you to keep well clear of them."

Before Sarah could ask why, there was a sharp cracking sound,



and raising her head she saw to her horror that Harry and the Slode had fallen. The branch they were walking on had snapped, sending them crashing through the foliage. Abruptly, the Doctor and Sarah were put down, and the other two Slodes peered down through the branches, chattering excitedly to each other.

Luckily, Harry and the Slode had managed to catch hold of a branch as they fell, and were now hanging above the swamp. Quickly the Doctor clambered down, motioning to the other Slodes to follow him.

Sarah watched with bated breath as they climbed from branch to branch, and at first she didn't notice the flurry in the swamp below.

Then she saw something that made her flesh crawl. "Look out!" she screamed, for out of the green slime rose two of the shapeless creatures she had seen earlier—the Carks.

Their open mouths reached up to suck Harry and the Slode down to their deaths, but Sarah's scream distracted them for a moment, giving the Doctor and the others time to pull them to safety.

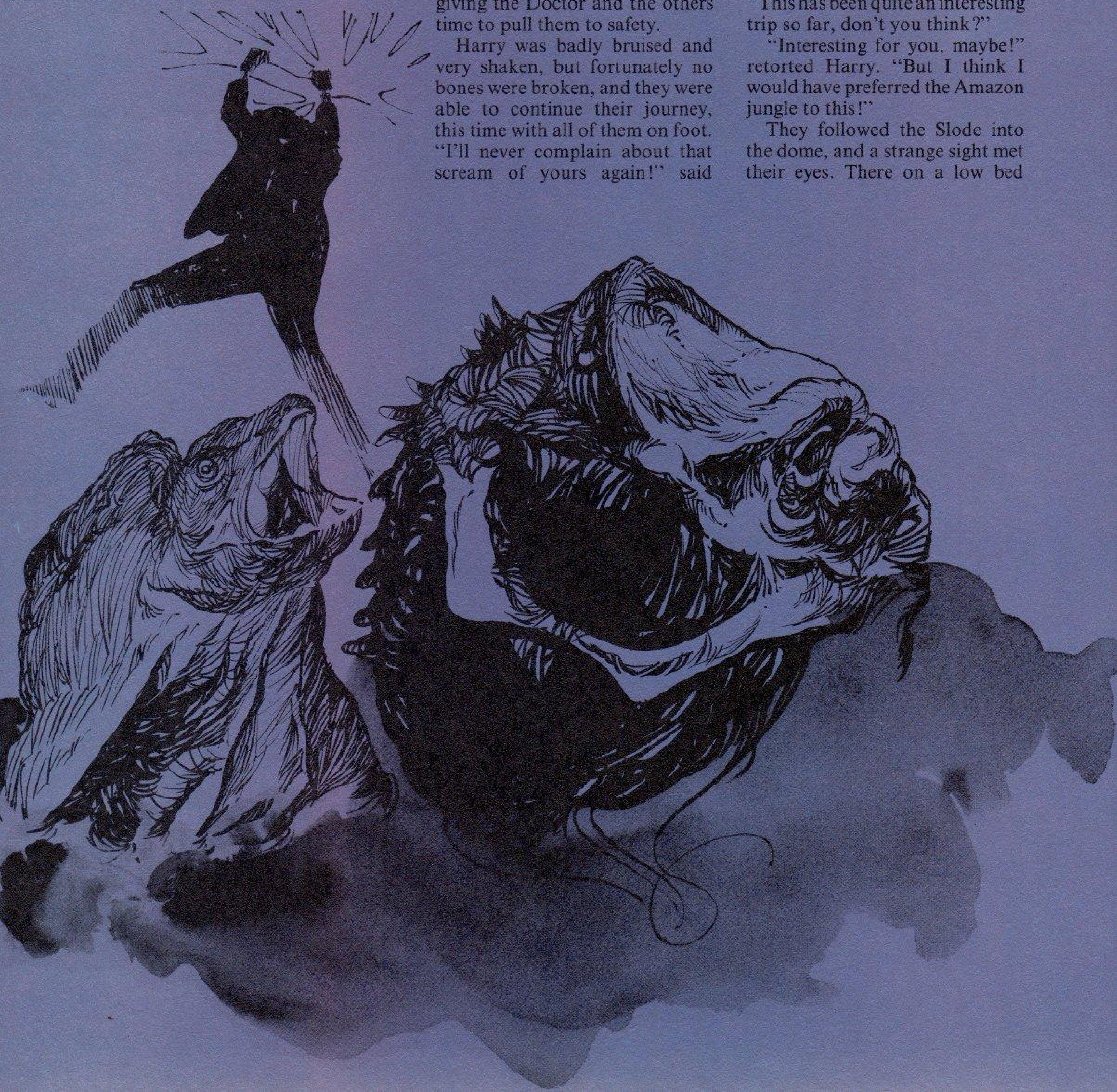
Harry was badly bruised and very shaken, but fortunately no bones were broken, and they were able to continue their journey, this time with all of them on foot. "I'll never complain about that scream of yours again!" said Harry fervently, as he helped Sarah over a branch.

They walked for what seemed like miles, until they finally came to a kind of clearing, and here they stopped. "If you look around you will see signs of habitation," remarked the Doctor, and he pointed to a strange domed construction above their heads. There were more of these buildings scattered round the clearing, and one of their escorts pointed to an extra large dome on the far side.

"I think he wants us to go in," said the Doctor, and he grinned. "This has been quite an interesting trip so far, don't you think?"

"Interesting for you, maybe!" retorted Harry. "But I think I would have preferred the Amazon jungle to this!"

They followed the Slode into the dome, and a strange sight met their eyes. There on a low bed



was an old, old man, and kneeling beside him was a Slode who was wiping his forehead with a green cloth. The old man's hair was pure white and very long, and his face had the greyish tinge of those who have not long to live.

For a moment the Doctor stood absolutely still, and Sarah was amazed to see that his eyes were moist. "Zyphos—my dear fellow!" he said at last, and he too knelt beside the bed.

The old man opened his eyes, and was obviously puzzled for a moment at the sight of a strange face. Then he smiled and held out a thin hand.

"Hello, Doctor, I didn't recognise you for a moment," he said. "What in the name of the universe brings you to this out-of-the-way place?"

"I could ask you the same question," replied the Doctor. "The last I heard of you was that your ship had disappeared, and that you and your crew were presumed dead."

"Ah yes, my ship," said Zyphos, nodding his head, "it seems such a long time ago that I can scarcely remember—I haven't aged as well as you, Doctor." He laughed gently, and then continued. "The ship crashed onto this planet after the power plant failed and, sadly, most of the crew perished in the swamp at the mercy of the Carks. The rest died of fever, leaving me to survive as best I could. I think I too would have died if the Slodes hadn't found me when they did."

He stopped as a Slode came in with some small wooden cups containing a thick brown liquid, and seeing the expression on Sarah's face he smiled. "You'll find that it will quench your thirst, and it doesn't taste as bad as it looks." In fact the strange drink tasted very good, and as Zyphos had said, it quenched their thirst completely.

"Now, where was I?" said Zyphos. "The Slodes—yes, they found me and nursed me back to health. I knew that I would never leave Diamedes, so I learnt their language and settled down as best I could. I have had a pleasant life on the whole, and it is only now that I am old and weak that I long to see my homeland again." His voice tailed off, his eyes closed and he drifted into sleep.

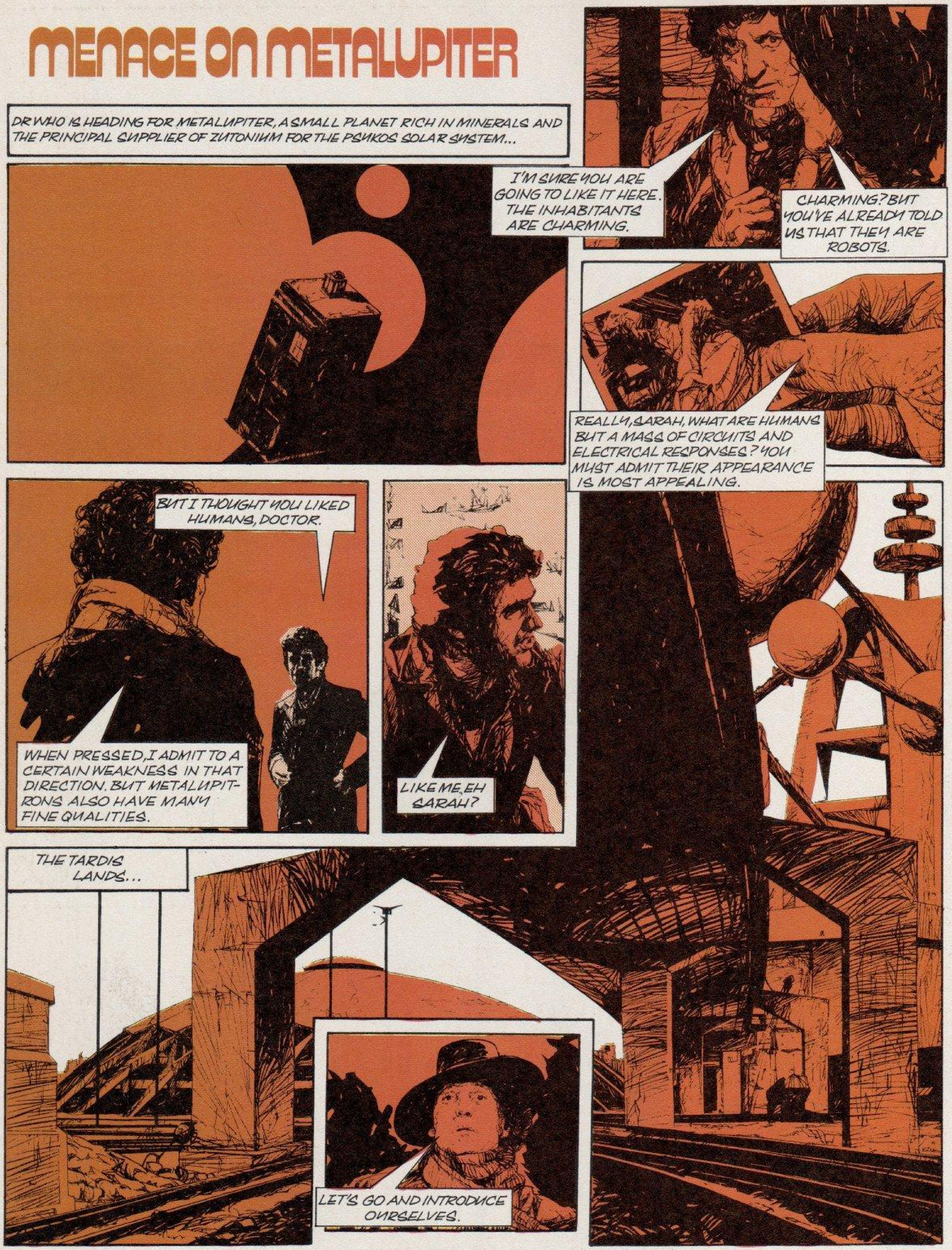
The Doctor shook his head sadly. "He was the finest captain in the Tandrian fleet," he sighed, "and we were good friends for many years. It seems hard that he should have to die so far from his own kind."

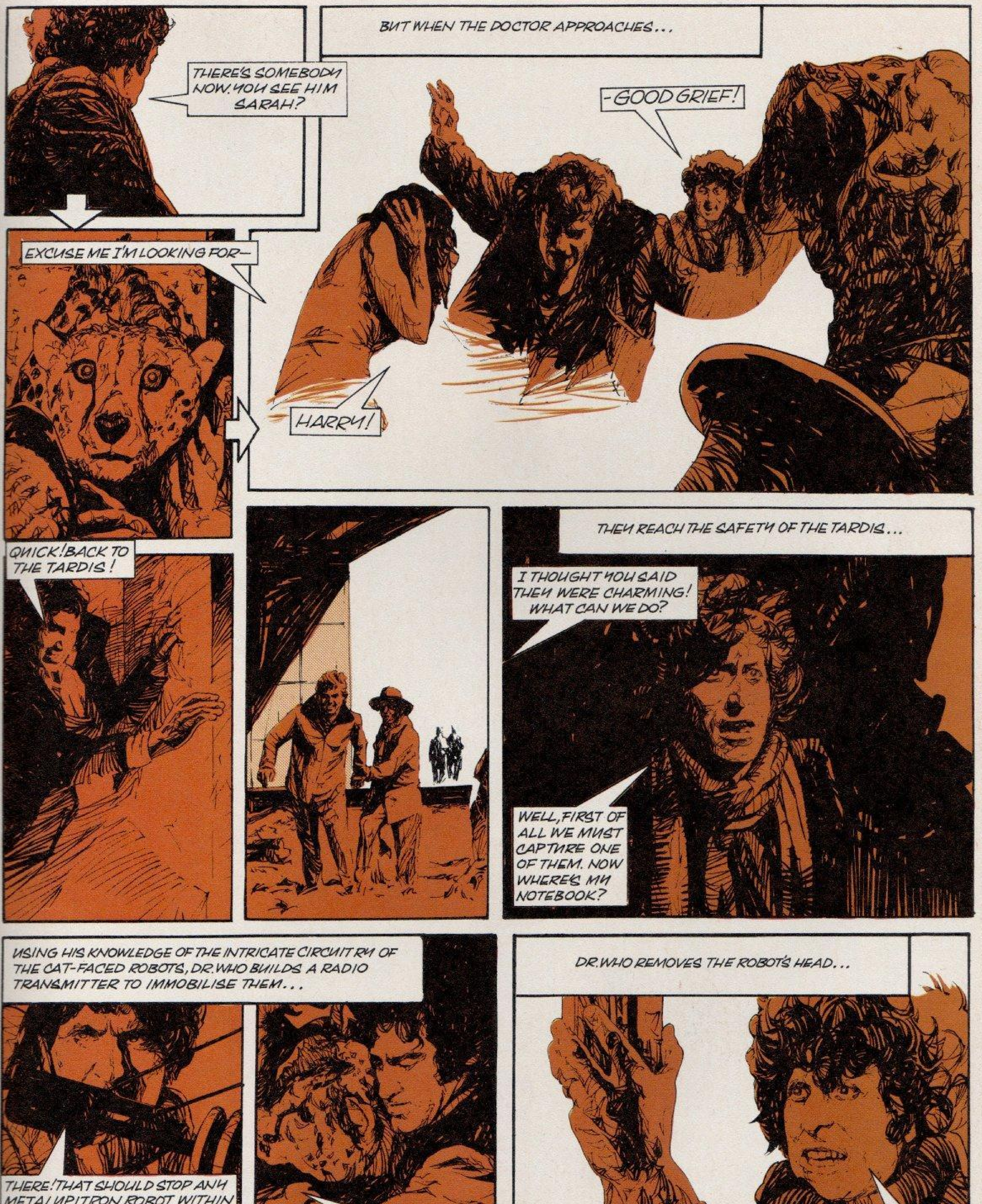
Sarah looked at Harry and he nodded. "I think we know what you are thinking, Doctor," she said, "and it's okay with us."

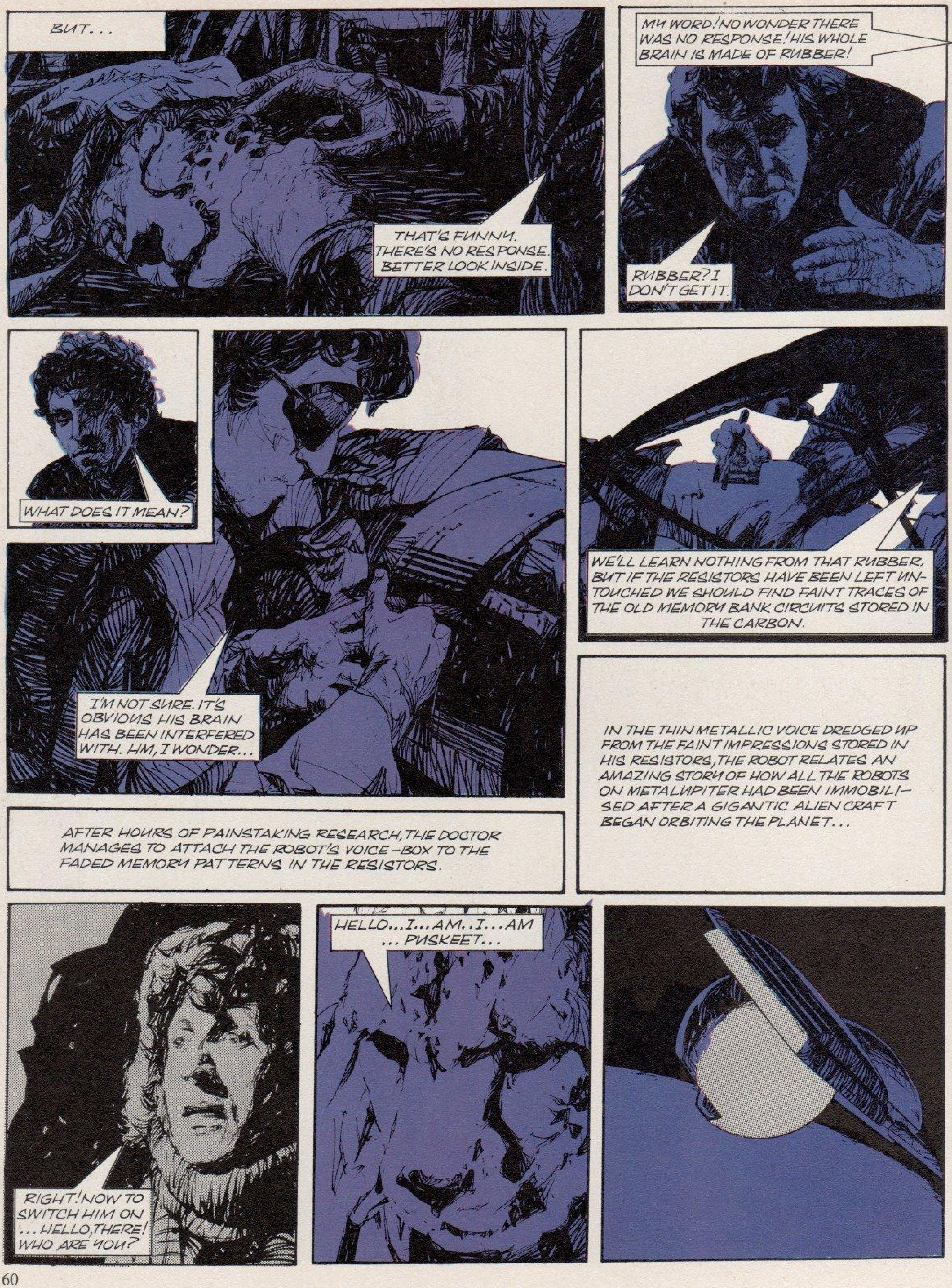
"Thank goodness for that!" the Doctor grinned. "I thought you two might be hankering after your own kind too! The journey shouldn't take too long anyway, and then we can pay our old friend the Brigadier a visit."

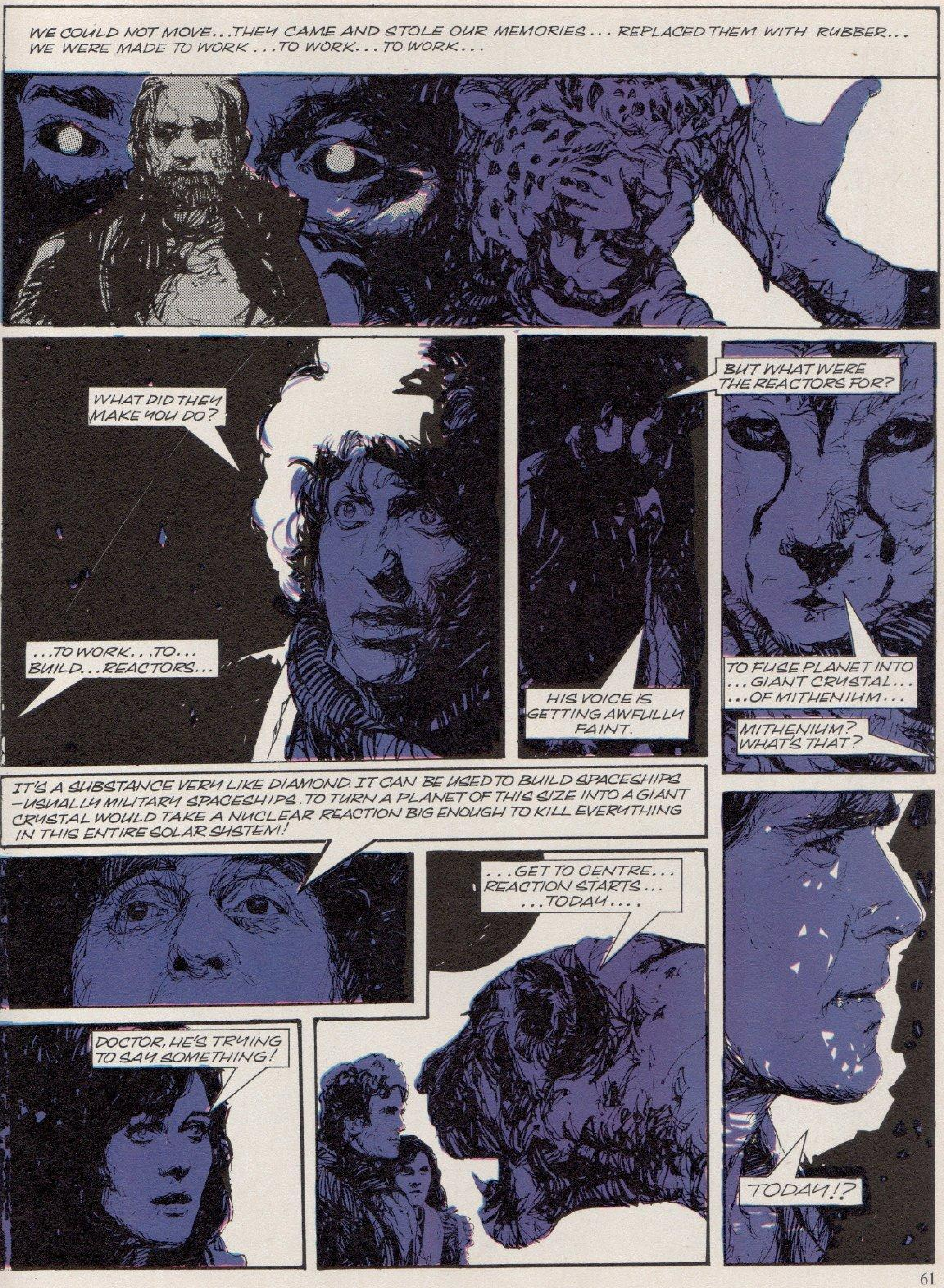
"Provided there aren't any more detours, of course!" retorted Sarah.

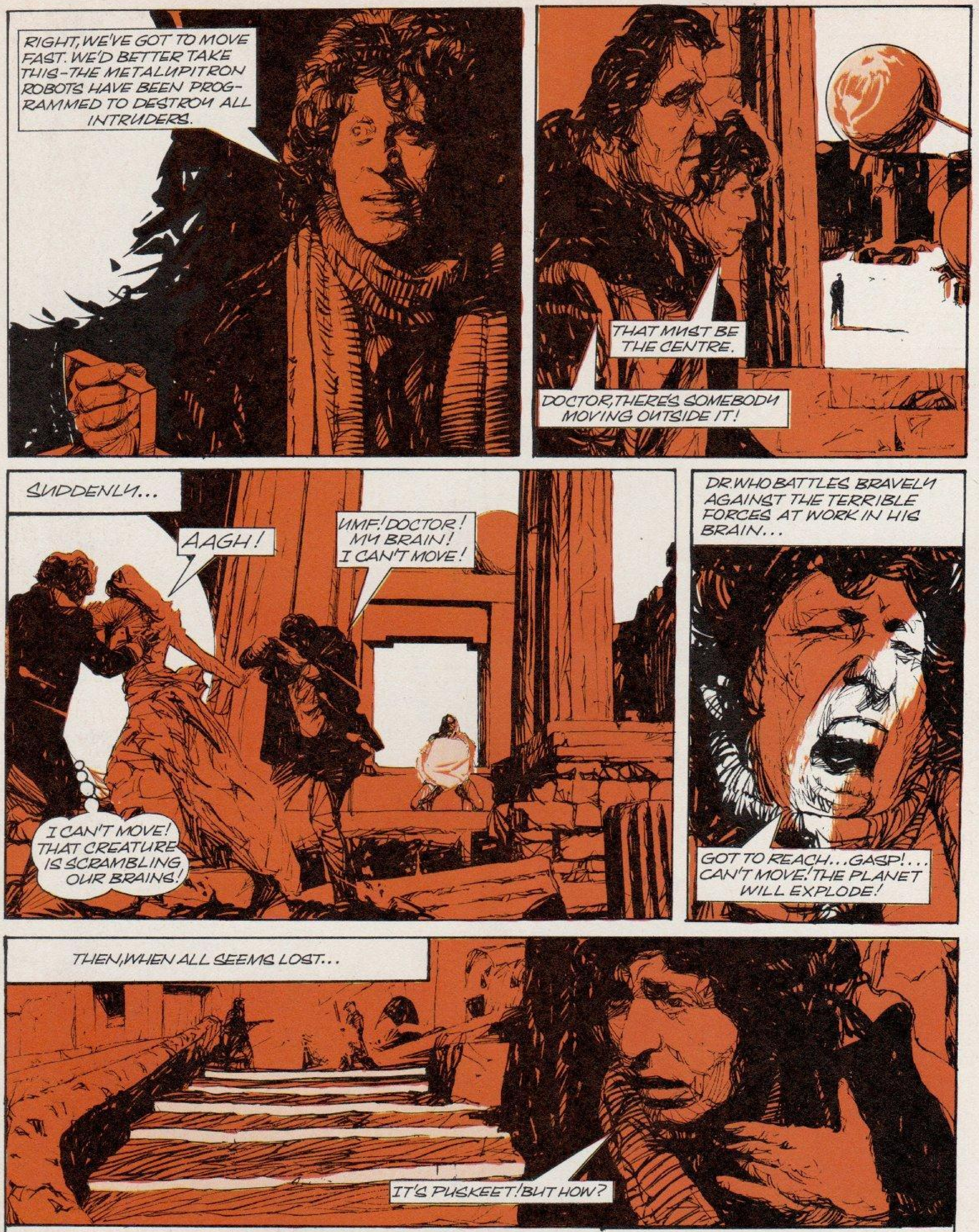
MENACE ON METALUPITER

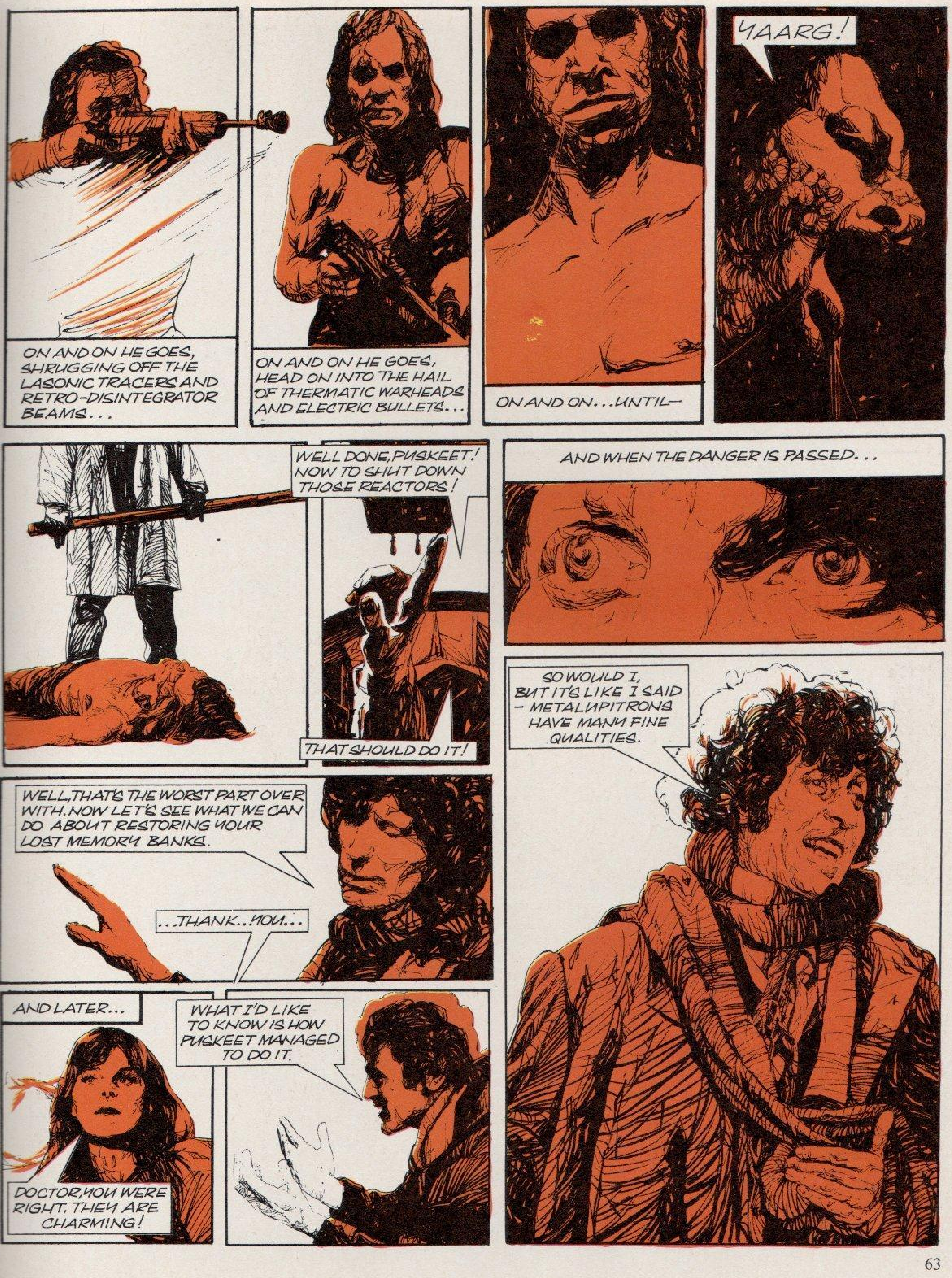

DR WHO IS HEADING FOR METALUPITER, A SMALL PLANET RICH IN MINERALS AND THE PRINCIPAL SUPPLIER OF ZUTONIUM FOR THE PSYKOS SOLAR SYSTEM...
I'M SURE YOU ARE GOING TO LIKE IT HERE. THE INHABITANTS ARE CHARMING.
CHARMING? BUT YOU'VE ALREADY TOLD US THAT THEY ARE ROBOTS.
REALLY, SARAH, WHAT ARE HUMANS BUT A MASS OF CIRCUITS AND ELECTRICAL RESPONSES? YOU MUST ADMIT THEIR APPEARANCE IS MOST APPEALING.
BUT I THOUGHT YOU LIKED HUMANS, DOCTOR.
WHEN PRESSED, I ADMIT TO A CERTAIN WEAKNESS IN THAT DIRECTION. BUT METALUPITRONS ALSO HAVE MANY FINE QUALITIES.
LIKE ME, EH SARAH?
THE TARDIS LANDS...
LET'S GO AND INTRODUCE OURSELVES.


THERE'S SOMEBODY NOW. YOU SEE HIM SARAH?
EXCUSE ME I'M LOOKING FOR—
BUT WHEN THE DOCTOR APPROACHES...
-GOOD GRIEF!
HARRY!
QUICK! BACK TO THE TARDIS!
THEY REACH THE SAFETY OF THE TARDIS...
I THOUGHT YOU SAID THEY WERE CHARMING! WHAT CAN WE DO?
WELL, FIRST OF ALL WE MUST CAPTURE ONE OF THEM. NOW WHERE'S MY NOTEBOOK?
USING HIS KNOWLEDGE OF THE INTRICATE CIRCUITRY OF THE CAT-FACED ROBOTS, DR. WHO BUILDS A RADIO TRANSMITTER TO IMMOBILISE THEM...
THERE! THAT SHOULD STOP ANY METALUPITRON ROBOT WITHIN A MILE OF HERE.
NOW, HARRY, WOULD YOU BE SO GOOD AS TO STEP OUTSIDE AND BRING ME ONE IN?
AH, THANK YOU, HARRY. COULD YOU BRING HIM OVER HERE?
DR. WHO REMOVES THE ROBOT'S HEAD...
IF I PLUG THESE WIRES INTO HIS MEMORY BANK WE SHOULD FIND OUT WHY WE WERE ATTACKED.


BUT...
THAT'S FUNNY. THERE'S NO RESPONSE. BETTER LOOK INSIDE.
MY WORD! NO WONDER THERE WAS NO RESPONSE! HIS WHOLE BRAIN IS MADE OF RUBBER!
RUBBER? I DON'T GET IT.
WHAT DOES IT MEAN?
I'M NOT SURE. IT'S OBVIOUS HIS BRAIN HAS BEEN INTERFERED WITH. HM, I WONDER...
WE'LL LEARN NOTHING FROM THAT RUBBER. BUT IF THE RESISTORS HAVE BEEN LEFT UNTOUCHED WE SHOULD FIND FAINT TRACES OF THE OLD MEMORY BANK CIRCUITS STORED IN THE CARBON.
AFTER HOURS OF PAINSTAKING RESEARCH, THE DOCTOR MANAGES TO ATTACH THE ROBOT'S VOICE-BOX TO THE FADED MEMORY PATTERNS IN THE RESISTORS.
RIGHT! NOW TO SWITCH HIM ON ... HELLO, THERE! WHO ARE YOU?
HELLO... I... AM.. I... AM ... PUSKEET...
IN THE THIN METALLIC VOICE DREDGED UP FROM THE FAINT IMPRESSIONS STORED IN HIS RESISTORS, THE ROBOT RELATES AN AMAZING STORY OF HOW ALL THE ROBOTS ON METALUPITER HAD BEEN IMMOBILISED AFTER A GIGANTIC ALIEN CRAFT BEGAN ORBITING THE PLANET...


WE COULD NOT MOVE... THEY CAME AND STOLE OUR MEMORIES ... REPLACED THEM WITH RUBBER... WE WERE MADE TO WORK ... TO WORK... TO WORK...
WHAT DID THEY MAKE YOU DO?
...TO WORK... TO... BUILD... REACTORS...
BUT WHAT WERE THE REACTORS FOR?
HIS VOICE IS GETTING AWFULLY FAINT.
TO FUSE PLANET INTO ... GIANT CRYSTAL... ...OF MITHENIUM...
MITHENIUM? WHAT'S THAT?
IT'S A SUBSTANCE VERY LIKE DIAMOND. IT CAN BE USED TO BUILD SPACESHIPS —USUALLY MILITARY SPACESHIPS. TO TURN A PLANET OF THIS SIZE INTO A GIANT CRYSTAL WOULD TAKE A NUCLEAR REACTION BIG ENOUGH TO KILL EVERYTHING IN THIS ENTIRE SOLAR SYSTEM!
... GET TO CENTRE... REACTION STARTS... ...TODAY....
DOCTOR, HE'S TRYING TO SAY SOMETHING!
TODAY!?


RIGHT, WE'VE GOT TO MOVE FAST. WE'D BETTER TAKE THIS-THE METALUPITRON ROBOTS HAVE BEEN PROGRAMMED TO DESTROY ALL INTRUDERS.
THAT MUST BE THE CENTRE.
DOCTOR, THERE'S SOMEBODY MOVING OUTSIDE IT!
SUDDENLY...
AAGH!
UMF! DOCTOR! MY BRAIN! I CAN'T MOVE!
I CAN'T MOVE! THAT CREATURE IS SCRAMBLING OUR BRAINS!
DR. WHO BATTLES BRAVELY AGAINST THE TERRIBLE FORCES AT WORK IN HIS BRAIN...
GOT TO REACH...GASP!... CAN'T MOVE! THE PLANET WILL EXPLODE!
THEN, WHEN ALL SEEMS LOST...
IT'S PUSKEET! BUT HOW?
IGNORING THE AWESOME FIREPOWER OF THE FOUR-ARMED CREATURE, PUSKEET STRIDES GRIMLY FORWARD...


ON AND ON HE GOES, SHRUGGING OFF THE LASONIC TRACERS AND RETRO-DISINTEGRATOR BEAMS...
ON AND ON HE GOES, HEAD ON INTO THE HAIL OF THERMATIC WARHEADS AND ELECTRIC BULLETS...
ON AND ON... UNTIL—
YAARG!
WELL DONE, PUSKEET! NOW TO SHUT DOWN THOSE REACTORS!
THAT SHOULD DO IT!
AND WHEN THE DANGER IS PASSED...
WELL, THAT'S THE WORST PART OVER WITH. NOW LET'S SEE WHAT WE CAN DO ABOUT RESTORING YOUR LOST MEMORY BANKS.
...THANK...YOU...
AND LATER...
DOCTOR, YOU WERE RIGHT, THEY ARE CHARMING!
WHAT I'D LIKE TO KNOW IS HOW PUSKEET MANAGED TO DO IT.
SO WOULD I, BUT IT'S LIKE I SAID - METALUPITRONS HAVE MANY FINE QUALITIES.

DOUBLE TROUBLE!

"You look very pale, Sarah," remarked the Doctor, easing back the controls of the Tardis. "Don't you feel well?"

Sarah looked startled. "I'm fine, thanks," she said. "It must be the journey that has made me a bit tired."

The Tardis landed smoothly, and the Doctor stepped out into the bright sunshine of an English summer's day. After the gloom of the planet Dumok, their last stopping place, it was pleasant to feel the warmth of the sun's rays, instead of the cold winds and bleak moonlight.

Unaccountably, Sarah winced as the sunshine fell on her, as if it caused her pain, but the moment passed, and she followed the Doctor into the relative cool of Brigadier Lethbridge Stewart's headquarters.

"Doctor, thank goodness you're back!" said a familiar voice. "The Brigadier is in quite a state about those formulae you left with him. No one can understand them!"

The Doctor sighed. "I had a feeling this would happen. All right, Harry, I'll see him straight away." He tugged at his scarf, and hurried off down the corridor.

"You don't look well, old girl," said Harry, taking Sarah's arm. "If you ask me, you could do with a good long rest. All this gallivanting about is taking its toll on you."

"Oh, don't you start!" said Sarah, sharply. "The Doctor has already told me I look ill, and now you! I feel perfectly well, thank you, so stop fussing!"

Harry was rather hurt by this outburst, but he put it down to the effects of the long journey, so he just said meekly, "Sorry, old girl," and steered her towards the canteen.

As they sat down, Sarah glanced over to the window and, as she did so, her face changed and she stiffened. Turning to see who or what she was looking at, Harry saw a young soldier, sitting alone at a table. He seemed a perfectly normal chap, and nothing that Harry could see accounted for Sarah's behaviour.

"Not your type," he said. But if he hoped for a response he was disappointed, for Sarah's face didn't alter, and her eyes glowed as if a blue flame burned in them. "You aren't being very sociable, you know," he continued uneasily, and this time he got through.

Sarah blinked, and to Harry's relief her features relaxed, and she smiled. "Sorry, Harry, I was miles away," she said. "What were you saying?"

Later that day, Harry had a word with the Doctor about Sarah's strange behaviour, but that worthy man was so wrapped up with his formulae that he only lent half an ear to what Harry was saying. "Women are notoriously moody," he said, "and Sarah Jane Smith is no exception!" With that, he returned to his calculations, leaving Harry to hope that he was right.

The following morning, after leaving the Brigadier, Harry saw Sarah on the path ahead of him and called to her. However, she must not have heard him, for she carried on walking, and it was then that he noticed how oddly she was moving. She held her head very stiffly, and her limbs moved jerkily.

"Sarah! Wait for me!" he called again, and ran after her.

Hearing his footsteps, she turned round. "Hello, Harry, I didn't see you."

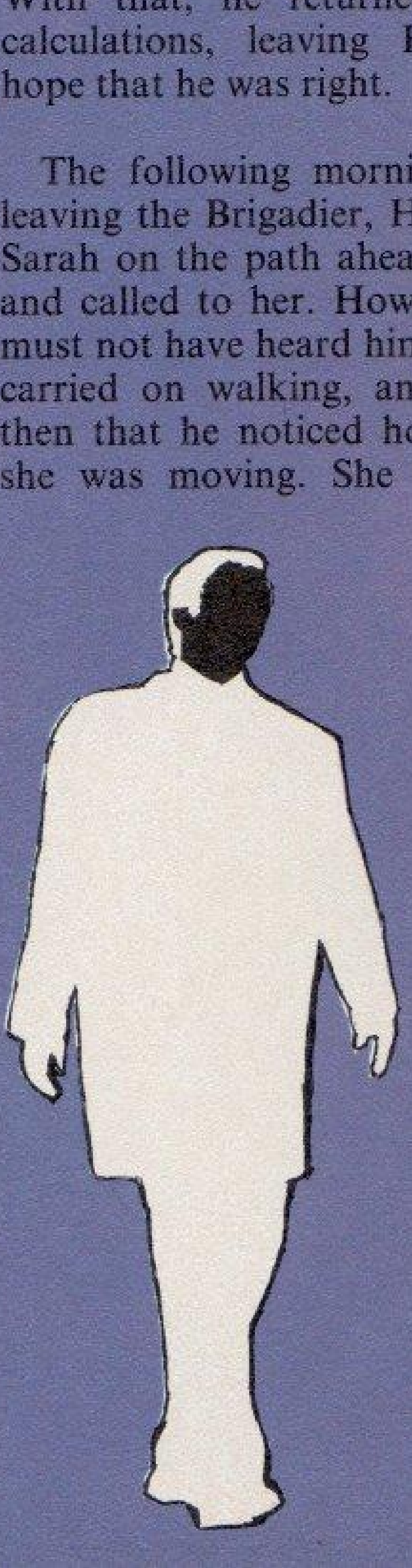
To Harry's dismay, she still had the same glazed look on her face, and he determined to keep an eye on her. They walked on until they came to the communications block, and here Sarah stopped.

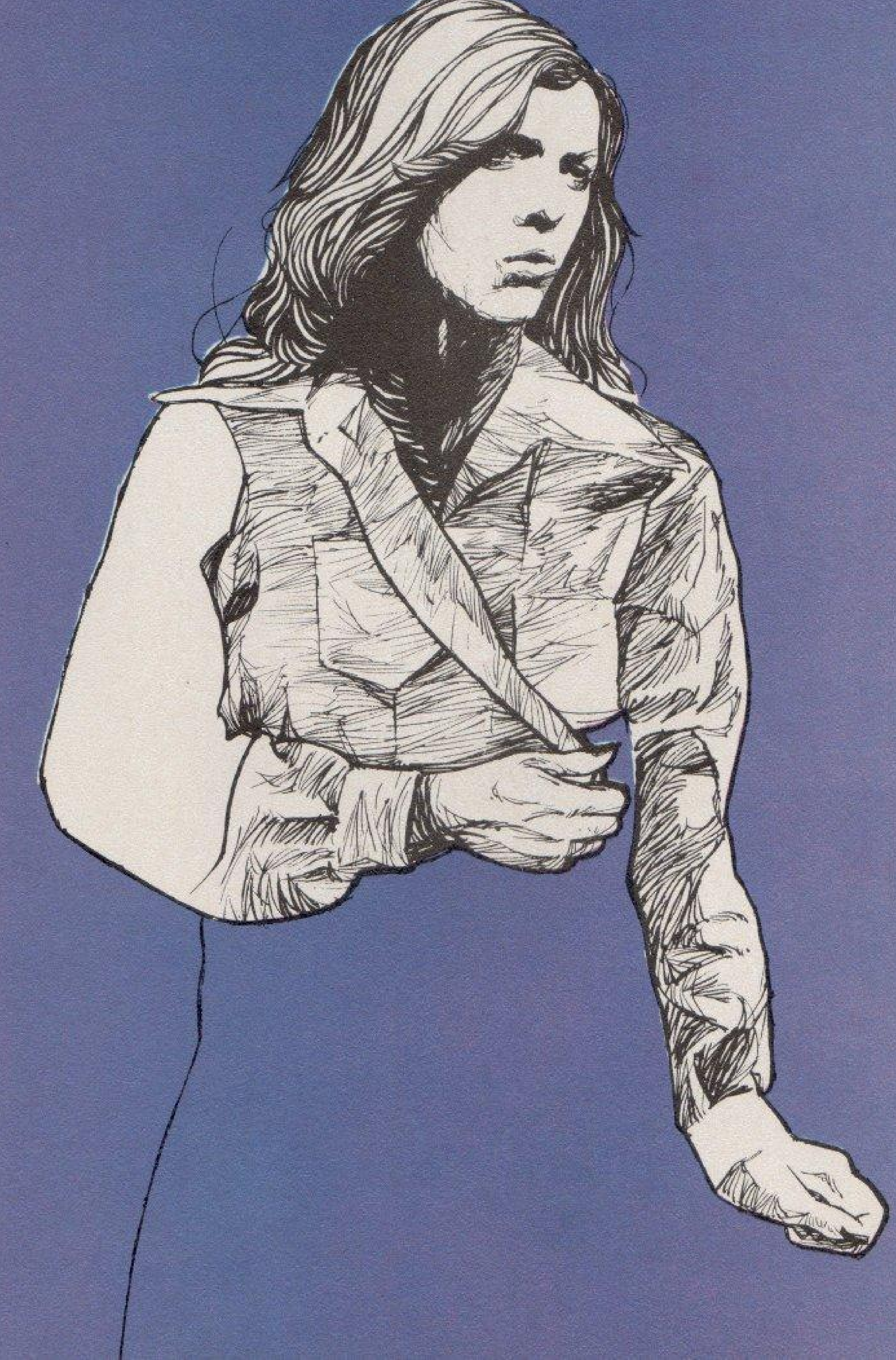
"I'll see you later," she said, "I have something to do here first." She disappeared into the building, and as soon as she was out of sight, Harry followed her. He could hear her footsteps in the corridor ahead, and he quietly tailed her until he heard a door close.

Peeping through the small window in the door, he was amazed to see that she was sitting at the controls of the main transmitter, obviously preparing to send a message into space.

Unable to contain himself any longer, Harry burst into the room, but he stopped abruptly as he saw the look on Sarah's face. Before he knew what was happening, she had grabbed him by both hands, and closed her eyes.

It was as if someone had sent an





electric charge through his body, and Harry's back arched in pain before he slumped to the ground in a dead faint.

When he came to, the Doctor was bending over him, shaking him gently. "Come on, Harry," he was saying, "this is no time to be taking a nap!"

Harry sat up with a start. "Sarah!" he said urgently. "Where is she?" Quickly, he told the astonished Doctor what had happened, and as he struggled to his feet, the Brigadier rushed in, with more startling news.

"Thank goodness, I've found you!" he gasped. "Come quickly Doctor, Sarah is fighting one of my men!"

"My money is definitely on Sarah," said the Doctor as they hurried outside, but his smile faded as he saw the two figures locked in combat on the grass.

Harry and the Brigadier moved to separate them, and the Doctor said sharply, "Leave them! Don't touch them whatever you do!"

Harry stopped, and rubbed his eyes. He must be seeing double! The two people in front of him had suddenly become four!

Sarah and the young soldier collapsed on the ground as two shadowy forms appeared from their bodies. These continued to fight, and they gradually became more solid as their skin turned a deeper and deeper blue.

"I wonder why they followed us here?" mused the Doctor, as he watched them.

"Do you know them?" asked Harry in surprise.

The Doctor shook his head. "Not these two," he replied. "But I am well acquainted with their people, having just left their planet, Dumok."

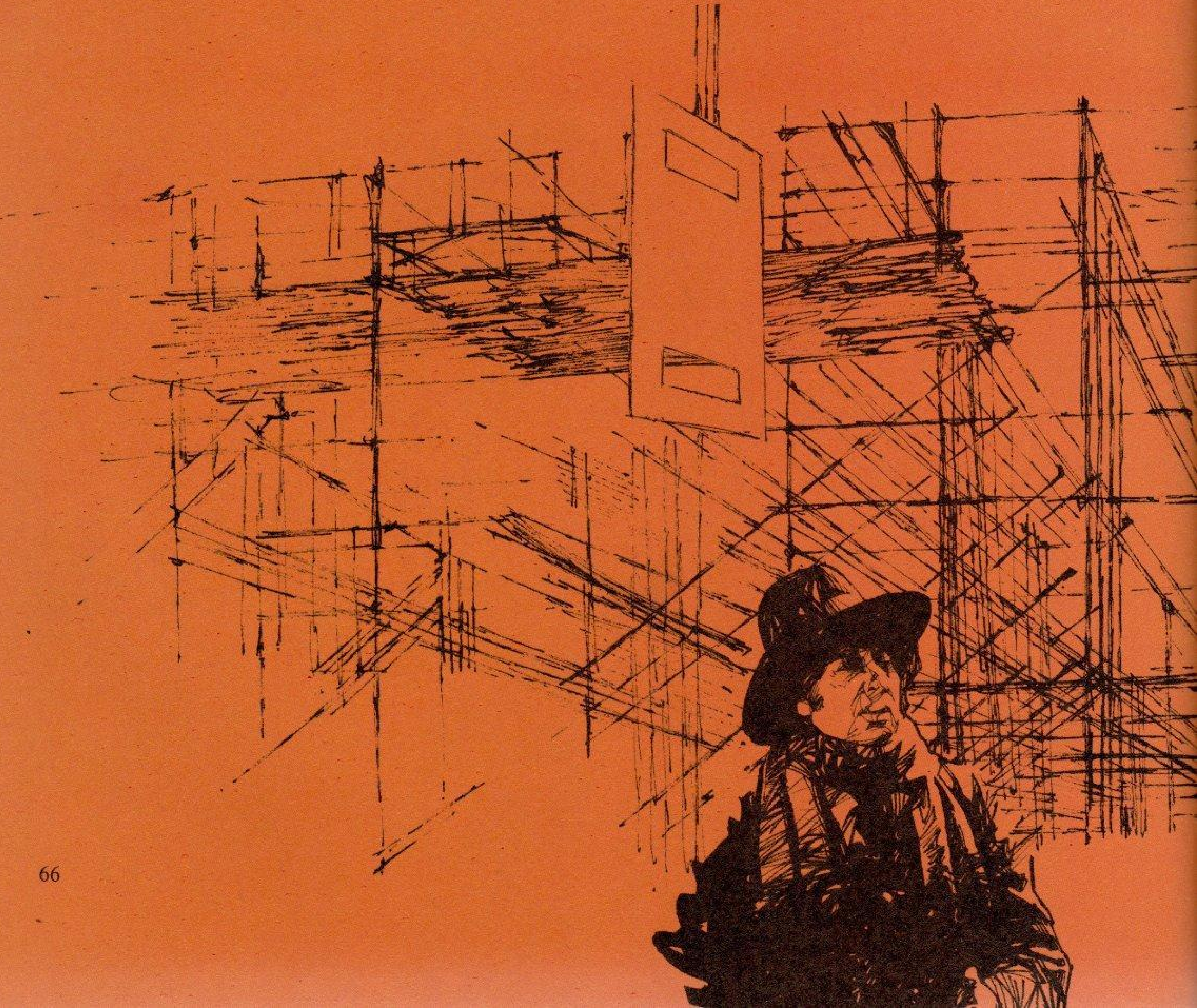
The creature who had so recently been Sarah had now pinned his opponent to the ground, and as they struggled, he reached for his two upper limbs. Harry winced in sympathy as the creature arched his body, giving a strange, bird-like cry, before falling senseless to the ground.

"My name is Theon," said the victor, coming over to them. "And I feel that I owe you an explanation for all this."

"It might be a good idea," agreed the Doctor.

"Well, as you will have realised, we are from the planet Dumok. I am a member of our Disciplinary Council, and I have been trailing this offender for many of your Earth months. He killed one of our elders and, until now, has managed to avoid all the traps we have set for him.

"When you visited us, Doctor,



he took the opportunity to hide in the Tardis, not knowing that I had followed him there. I didn't want to declare myself straight away, in case he escaped again, so I took over the body of your assistant and travelled unseen to Earth."

"How did you know that the offender had entered the body of that soldier?" asked Harry, thinking of the scene in the canteen.

"Ah, I was very lucky there," continued Theon, "because as he took over the human, I caught the slight blurring of image which occurs before we can settle into our new form. If I hadn't been there at the time, I would probably have lost him for good."

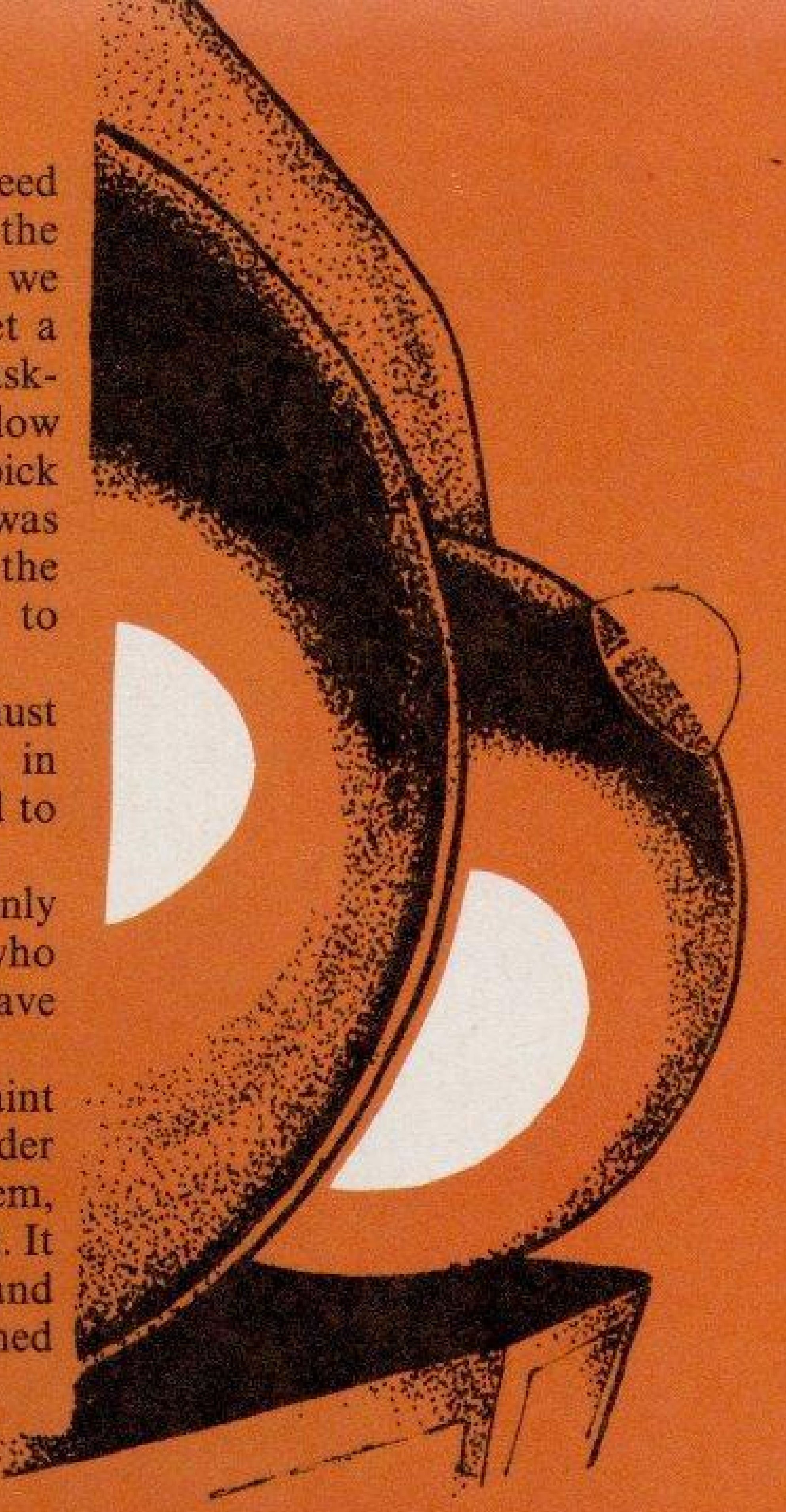
This time it was the Doctor who interrupted. "Then who were you sending the message to?" he asked. "Surely that transmitter isn't powerful enough to reach Dumok!"

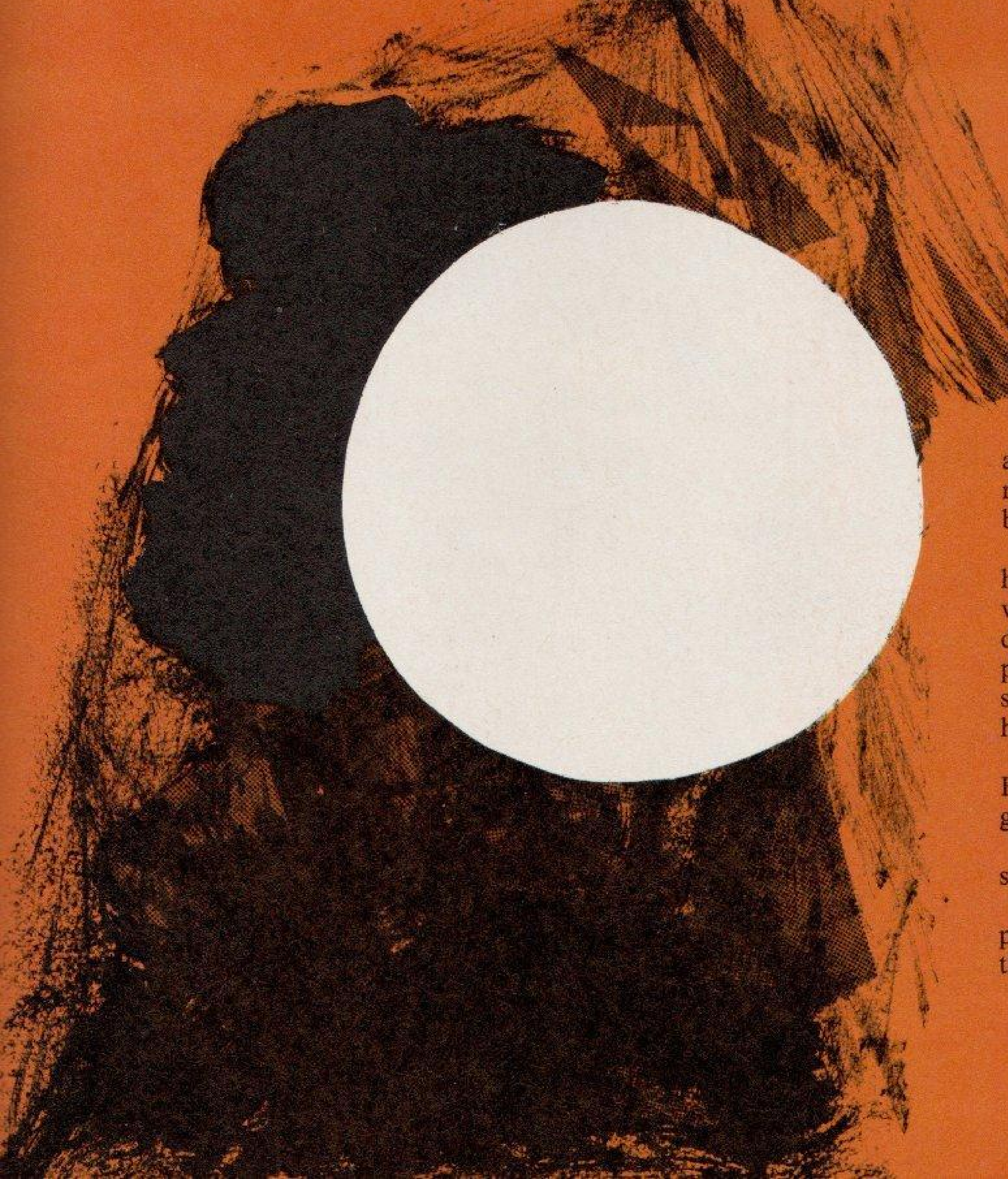
"That is true, Doctor," agreed Theon, "but I wasn't sending the message quite that far. Before we left Dumok, I managed to get a note to the High Command, asking them to send a ship to follow us here and, hopefully, to pick myself and the offender up. It was therefore vital that I told the captain of the ship where to land."

He turned to Harry. "I must apologise for attacking you in that way," he said, "but I had to get that message through."

Harry grinned. "I am only thankful that it wasn't Sarah who did it!" he said, "life could have been very difficult."

As he spoke they heard a faint whine, which gradually got louder until there, suspended above them, was a white, cigar-shaped craft. It landed gently on the turf, and immediately the doors opened and a group of blue creatures rushed out and picked up the limp body of the offender.





Theon shook each man by the hand, bowed low, and made his way to the white ship. As it disappeared into the clouds, a plaintive voice said, "Don't just stand there, you lot! Come and help me up!"

"Did you hear something, Harry?" asked the Doctor with a grin.

"I do believe I heard a slight squeak," replied Harry.

But the Brigadier was acting the perfect gentleman, and had beaten them both to it.

PICK THE PLANETS

Several of the planets are named after the ancient gods. Can you name these planets and the gods whose name they share.

1. The lord of heaven,
   The bringer of light,
   In heraldry, azure,
   Sacred colour, white.

   Which planet?

2. Winged hat and sandals,
   The caduceus I bear,
   The gods' swift messenger,
   And for travellers I care.

   Which planet?

3. The patron of farmers,
   And yet the god of war,
   Once men thought that this planet
   Looked fiery red from afar.

   Which planet?

4. The brother of Neptune,
   When Proserpine was his wife
   In his underground kingdom,
   To earth came winter and strife.

   Which planet?

5. Discovered by Herschel,
   And first named after a king,
   This planet's four satellites
   Have a fairytale ring.

   Which planet?

6. Known also as Kronos,
   He killed his children all but three,
   Before this 'red lead' god
   Was by Jupiter banished finally.

   Which planet?

Check your answers on page 76

MOONING ABOUT..

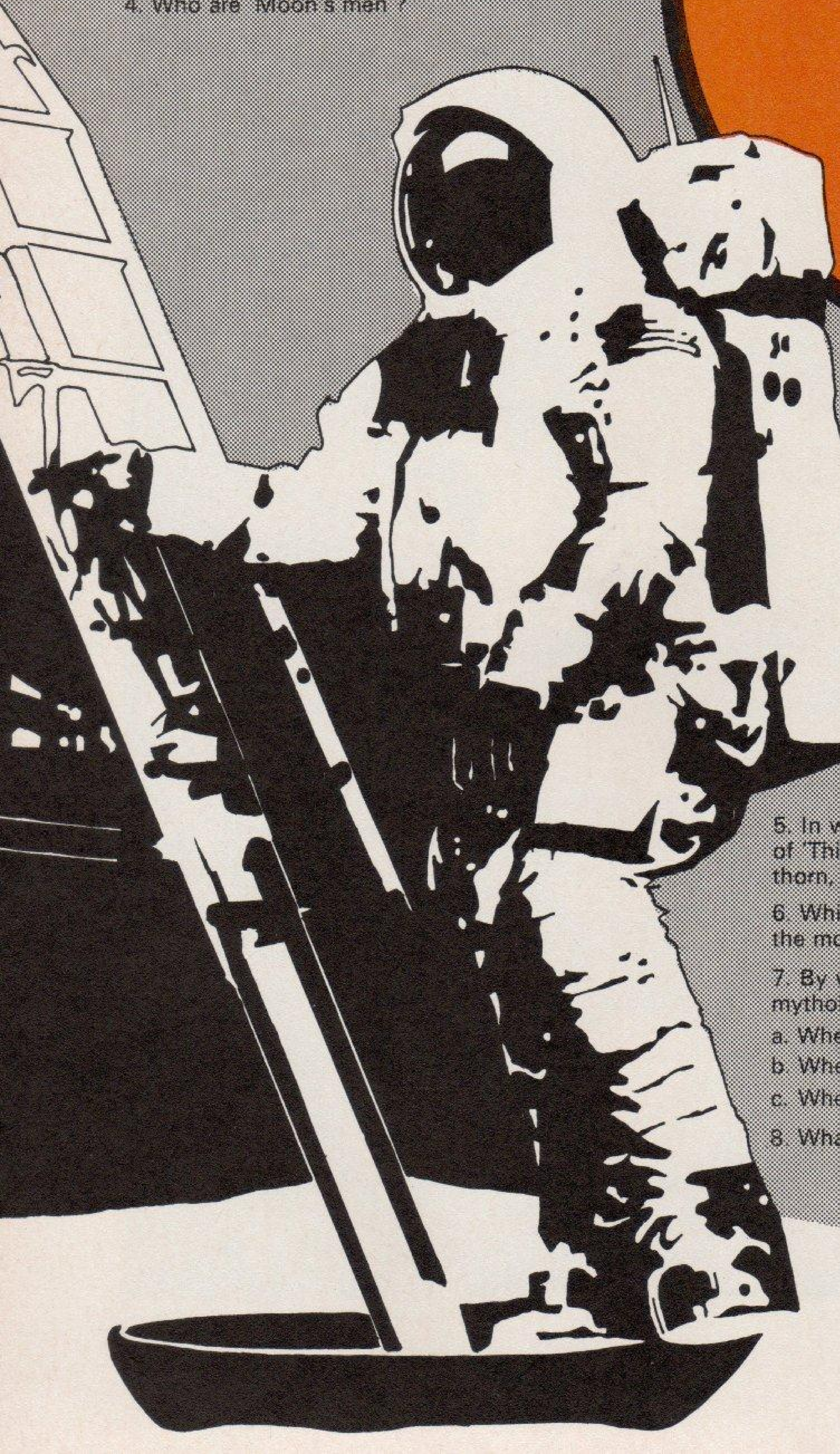
Everyone knows that Neil Armstrong was the first man to set foot on the moon, but do you know:

1. Where is 'The Island of the Moon'?

2. What is the old English name for the moon?

3. When the moon is 'Gibbous' what does this mean?

4. Who are 'Moon's men'?



5. In which of his plays does Shakespeare speak of 'This man with lantern, dog and bush of thorn, Presenteth moonshine'?

6. Which famous prophet was said to have cut the moon in two?

7. By what name is the moon known in classical mythology

a. When she has set?

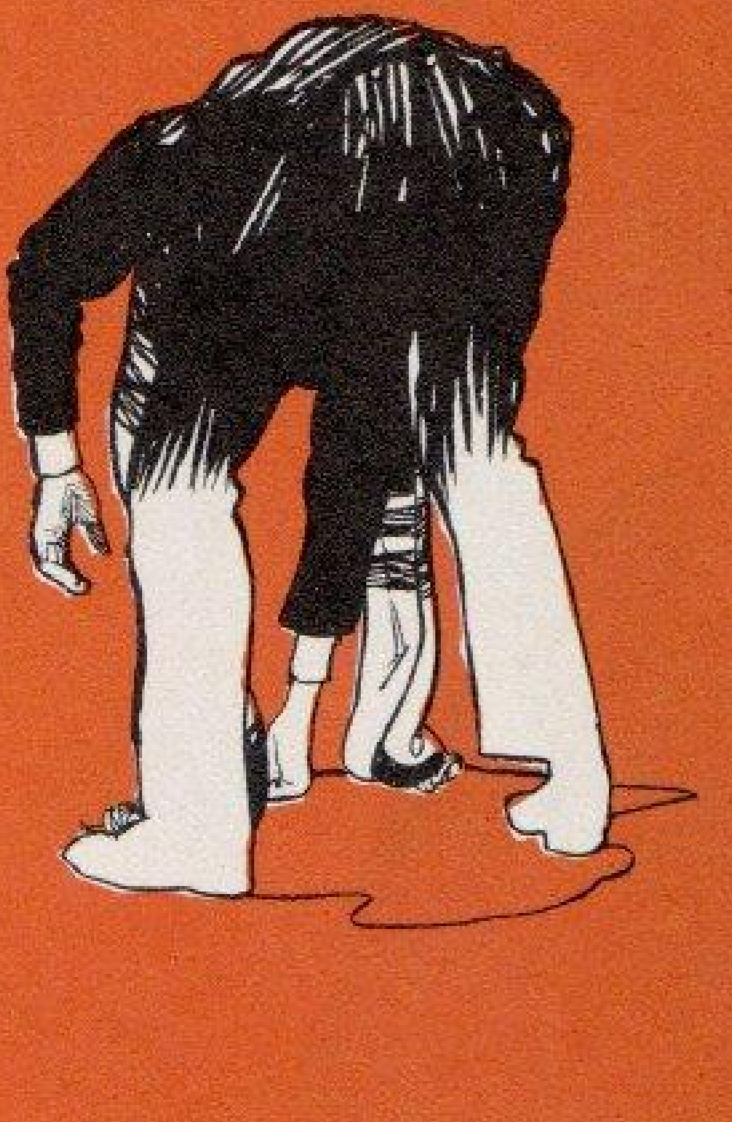
b. When she is a crescent?

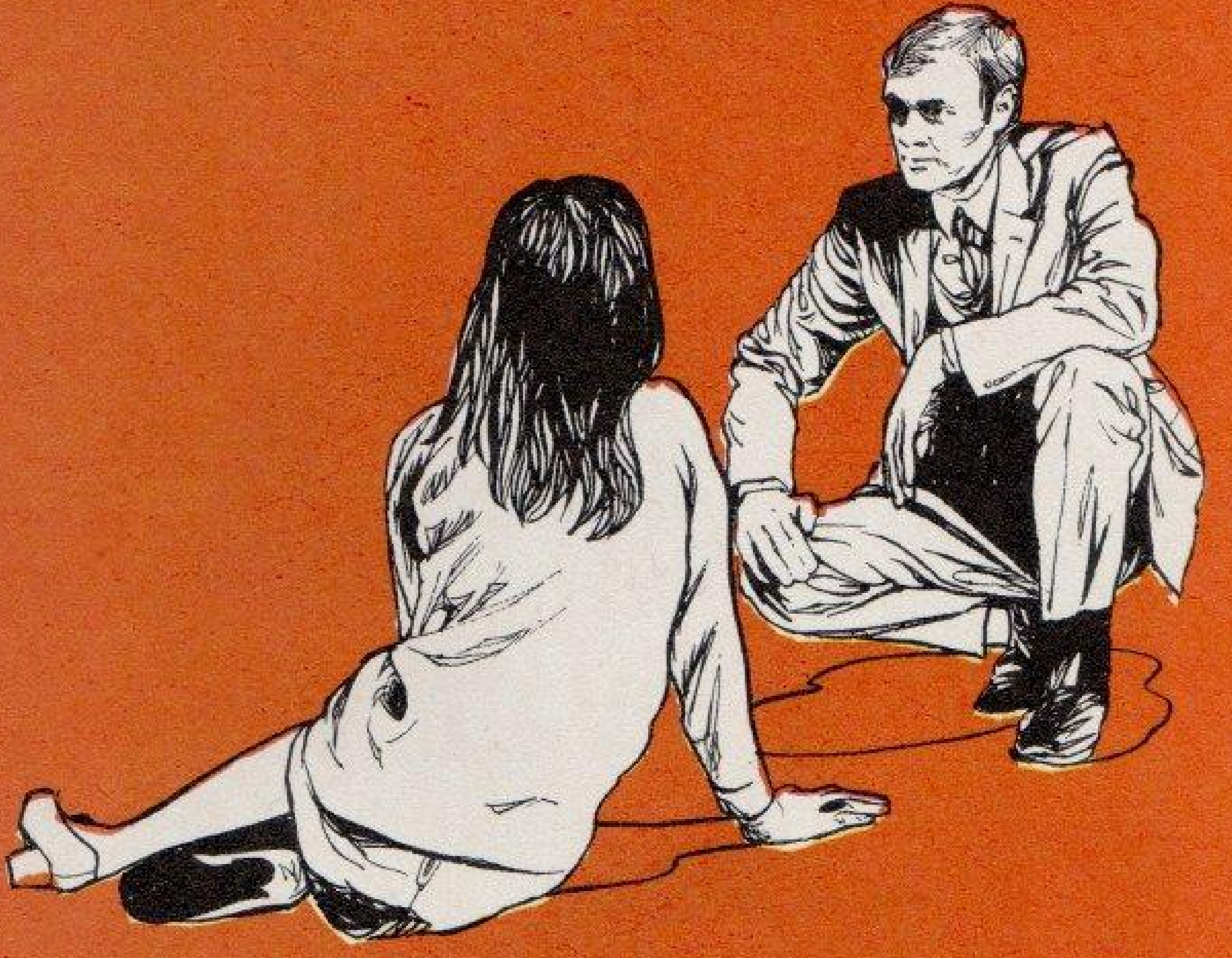
c. When she hunts the clouds?

8. What colour is a 'moon' horse?

Check your answers on page 76

Secret of the Bald Planet





As the Doctor, Harry and Sarah stepped from the Tardis the first impression they had was of standing on a gigantic billiard ball. There was no vegetation to be seen and the ground beneath them was cold, hard, smooth and completely white. There was no wind and their footsteps on the surface of the planet echoed eerily away into the distance, like the slamming of doors at the end of a long corridor.

"*Brrr!*" shivered Harry. "Not the sort of place I'd like to go on holiday."

"Me neither," agreed Sarah.

The Doctor was bent down on one knee, stroking the surface of the planet with the palm of his hand.

"For a journalist your command of English is at best erratic."

He lay on the cold ground and placed an ear to the floor.

"*Hmmmm.*"

Sarah and Harry looked at each other resignedly. Already the Doctor seemed to have forgotten the accident that had brought them here.

They had set off on the seemingly simple mission of investigating reports of a space-warp discovered by Japanese scientists. It was inside the space-warp itself that the Doctor had lost control of the Tardis.

"*Hmmmm.*"

"Well? Have you found out where we are yet?" Sarah was losing her patience.

"*Hmmmm.*"

"It's rude to repeat yourself."

The Doctor looked up from his position on the floor and was about to speak when the ground fell away and the three of them, along with the Tardis, floated gently down a wide, round, smooth-sided shaft.

They landed on their feet at the bottom of the shaft. A noise made them turn and they saw the heads of what looked like three large earwigs peering at them from holes at the side of the shaft.

Sarah gasped and Harry grimly clenched his fists as the Doctor stood quietly with one hand on his forehead.

Suddenly he winced and held up his hand.

"Please . . . not so fast. I must have more time to sort out the images if I am to understand you." The Doctor spoke out loud and the words had an immediate effect. At once the minds of all three of them were filled with precise words.

"Please . . . follow us."

Harry and Sarah looked to the Doctor for guidance, but he was already scrambling through the middle hole after the earwigs. They followed him into a long smooth round corridor and for the first time they could see that the earwigs were much bigger than the size of their heads suggested. Their bodies were encased in large triangular shells which they dragged effortlessly along with the eight pairs of legs that grew on their exposed upper bodies. The three shells were all yellow.

They were led through a maze of similar passages without any further communication with the creatures. Occasionally they would pass other similar beings with different coloured shells, but there was no attempt to contact them telepathically. At last the yellow creatures leading them stood to one side of the passage and ushered them into a huge room.

Inside the spherical room were earwigs in shells of almost every colour imaginable. Many of them were arranged neatly in rows, and in the centre of the carefully regimented creatures stood a particularly large purple-shelled earwig, the only shell of that colour in the entire building.

The Doctor and Harry walked slowly down through the lines of earwigs, with Sarah following a few steps behind. The Doctor addressed the purple-shelled creature.

"Pleased to meet you. I am a traveller in Time and Space and these are my friends from Earth, Harry and Sarah."

The Doctor was answered with a barrage of powerful, vivid images telepathically transmitted by the creature with the purple shell. It seemed that they had landed on Paras, and the Doctor was addressing the ruler of the Parads, Gresk. Gresk was pleased to welcome him and his friends, provided they respected the wishes of the inhabitants of Paras.

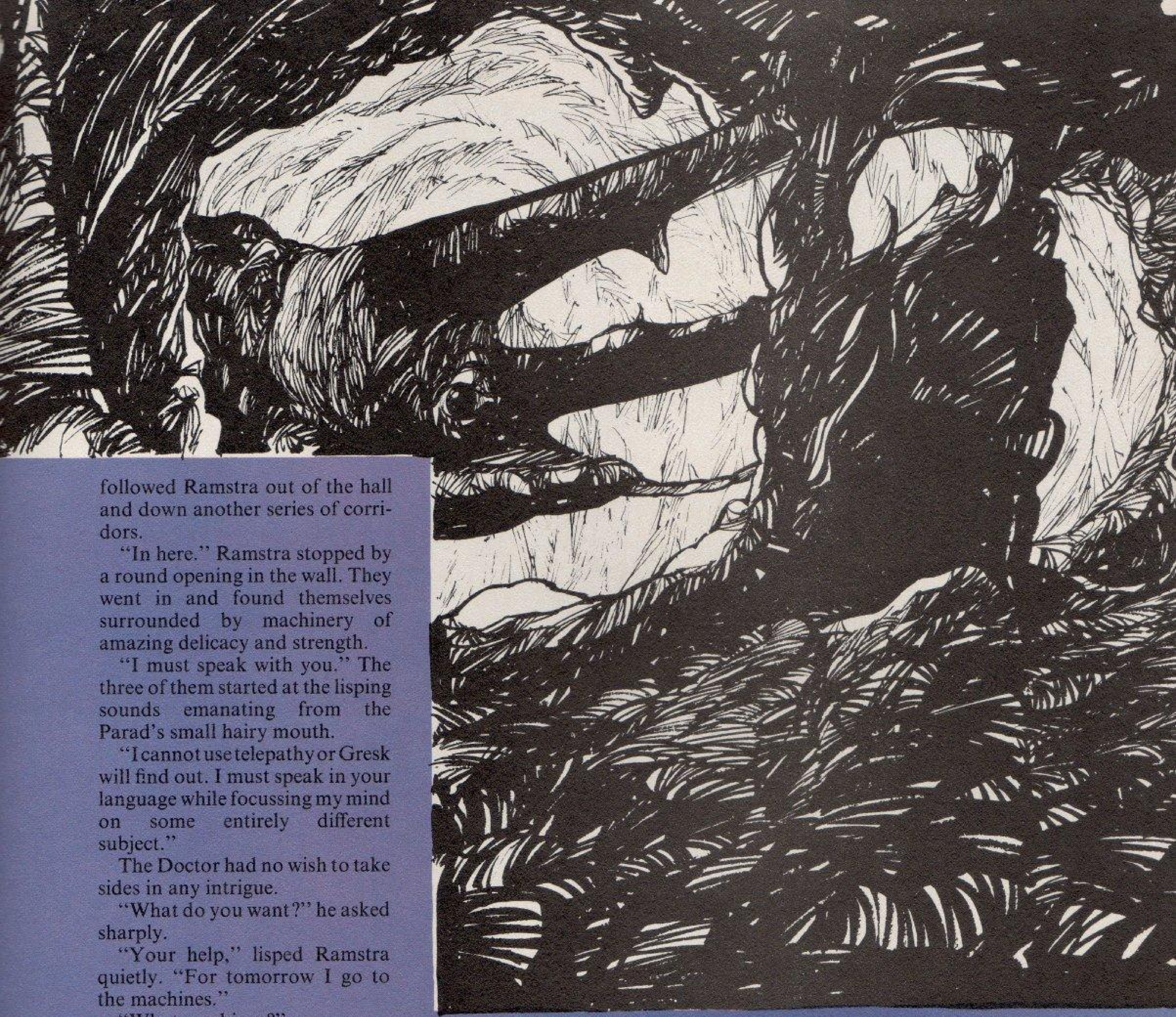
Although the message was simple, a comparatively formal cosmic welcome, the manner in which it was delivered made the Doctor shudder. Gresk had transmitted neither pictures nor words, but had touched such personal emotions in him that the Doctor felt somehow violated, as if someone had cut open his body and savagely massaged his heart.

Gresk introduced them to his second-in-command, Ramstra. Ramstra had a bright red shell and communicated with them telepathically, but in words neat, clipped, and urgent.

"We do not eat," he projected flatly in answer to Harry's comment on his rumbling stomach. "We are not like those of other planets, who grow fat, feeding off their planets like leeches on a dog and fouling their atmospheres." His brisk, scientific manner was a sharp contrast to the colourful, fluid projections of Gresk.

"Yes," Ramstra continued immediately, picking up the Doctor's thoughts, "I am a scientist like you. Perhaps you would care to see my laboratory?"

The Doctor looked to Gresk as if to ask permission and felt a world weary sigh of affirmation form in his mind. He motioned to Harry and Sarah and they



followed Ramstra out of the hall and down another series of corridors.

"In here." Ramstra stopped by a round opening in the wall. They went in and found themselves surrounded by machinery of amazing delicacy and strength.

"I must speak with you." The three of them started at the lisping sounds emanating from the Parad's small hairy mouth.

"I cannot use telepathy or Gresk will find out. I must speak in your language while focussing my mind on some entirely different subject."

The Doctor had no wish to take sides in any intrigue.

"What do you want?" he asked sharply.

"Your help," lisped Ramstra quietly. "For tomorrow I go to the machines."

"What machines?"

"The Rectulators. After sixteen seasons all of us must go there—except Gresk, of course."

The Doctor looked puzzled.

"I think you had better explain."

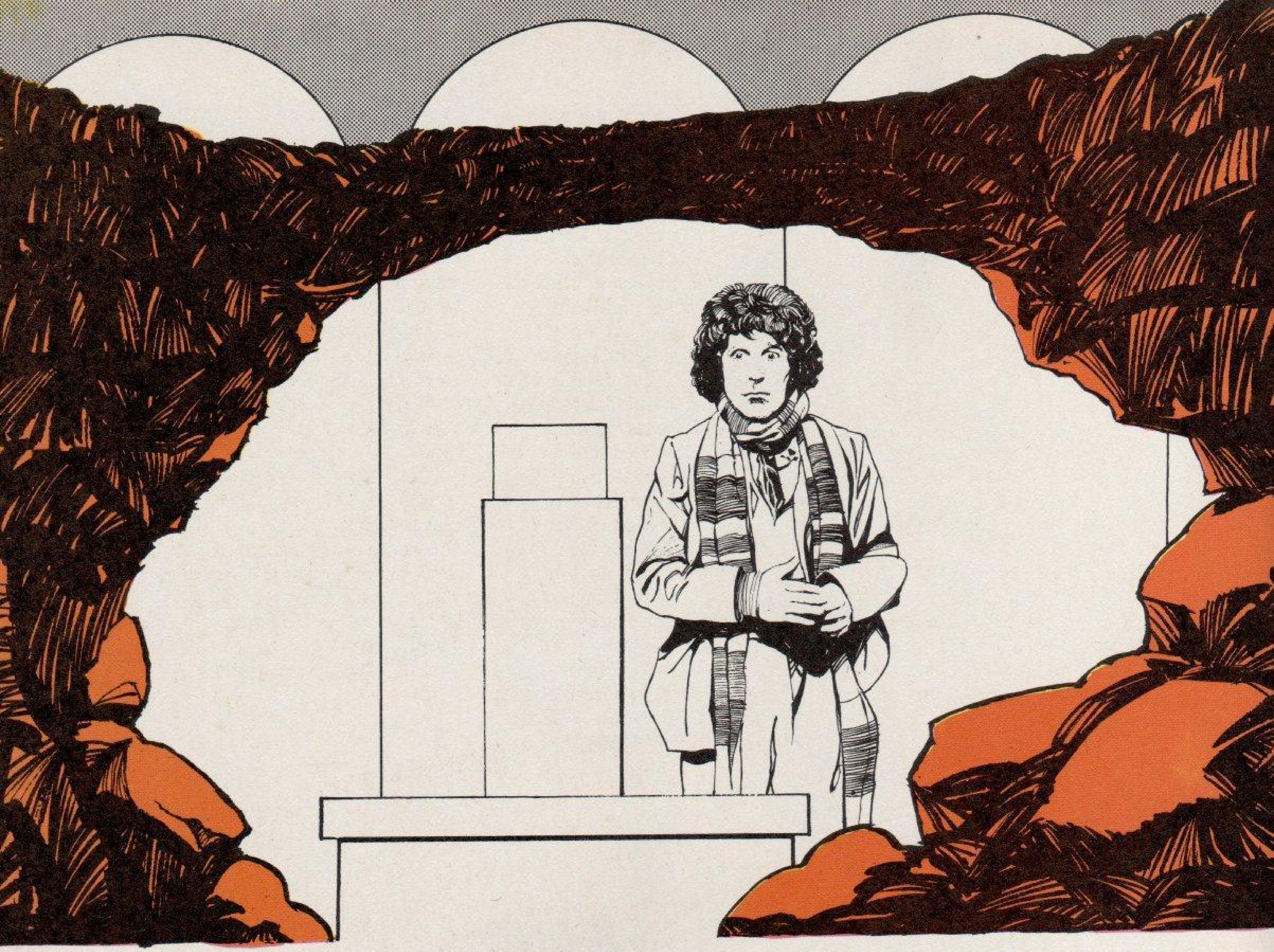
"Forgive me, I forget that you are not acquainted with our way of life. Ever since we Parads began recording our history we have gone into the Rectulators after sixteen seasons on this planet. The Rectulator switch is pulled and whoever is inside disappears. Where they go to nobody knows, for none have come back, but we all went there willingly until Gresk seized power."

Ramstra felt his concentration wavering and he stared hard at one of his machines before continuing in his measured whisper.

"Legend has it that the Rectulators transport whoever is inside onto our twin planet Bossgar. You probably saw it when you landed. We are moons to each other. The day before he was due in the Rectulators, Gresk led an armed revolution claiming that he had discovered that the Bossgarians had built the Rectulators years before to transport slaves to Bossgar. The seniors who were due to go into the Rectulator would not believe him so he ordered their destruction. That was almost one season ago."

"Then why are you going into the Rectulator?"

"Because it is my time. You will have noticed the diversity of colouring on the shells of our species. Did you also notice how the colours relate to the size? The young are always yellow. As they grow older the young males go through yellow-orange to orange and then to red-orange. After sixteen seasons they are red like me. The females grow through yellow-green to blue-green to deep blue. Males move around the colour circle one way, females the other, but going into the Rectulator forbids anyone from completing the half-circle." Ramstra



paused. "Except for Gresk. You will have noticed that he is of violet colouring, the direct opposite of his colouring at birth."

"And?"

Ramstra's lifeless voice seemed at odds with the sudden jerkings of his body and the constant movement of his arms. Sarah tried to disguise her unease.

Ramstra continued. "I studied the shells of the seniors whom Gresk ordered destroyed. As I have said, we do not eat, and throughout our time on Paras the energy supply inside our shells grows smaller.

"At the same time, our sensory perception is heightened proportionately. By the time we reach the red stage our senses are amongst the most finely tuned in the cosmos, but our bodies are old and dry, our shells almost empty."

"If Gresk is so feeble why can't you overpower him?"

"His telepathic probe has grown to be the most powerful on all the planets. Even now I cannot be sure he will not penetrate the wall I have erected in my mind, and I am one of this year's seniors."

The Doctor said nothing. Was Ramstra lying? His story sounded reasonable enough, but even if it was, what right had he to interfere? He prided himself on a kind of sixth sense when confronted with truths and untruths, but now he felt nothing.

"Do you think I could look at the Rectulators?"

"I should be most grateful if you would."

Ramstra took them to a long narrow room lined on both sides with transparent capsules large enough to take a red Parad. No machinery could be seen. In the middle of the table there was a pillar with a large tablet lying glowing on top of it. The translucent tablet was covered with tiny inscriptions.

"What's this?" asked the Doctor, going forward.

"We are not sure. It has always been there. We believe it tells the story of our lives after the Rectulators. Our scholars studied it endlessly until Gresk forbade it."

The Doctor looked at the tablet and his eyes lit up with surprise.

"It's written in Xylian!"

"You mean you can read it?"

"Of course! The Xylians are *very* old friends of mine. I think your mystery is about to be unravelled!"

The Doctor carefully read the detailed inscription. When he was half-way through he felt a sudden probing in his mind and realised that, sitting in the spherical room more than a mile away down twisting passages, Gresk had discovered what he was doing. He finished reading and turned to Ramstra.

"Gresk is coming. We must make sure that he is defeated. It is imperative that this year's seniors are not prevented from going in the Rectulators!"

"But what can we do?" asked Sarah.

"Ice-cream."

"What?"

"And you, Harry. Ice-cream. With kippers on top. And a few onions in the middle. Try and imagine the taste!"

The Doctor got out his screwdriver and crouched over a small circle at the bottom of the nearest Rectulator. In his mind he tried to imagine a huge brick wall, with another one behind it, then another and another, all blocked off by a sheet of lead.

Gresk appeared in the doorway.

Despite his tremendous concentration, the Doctor was unprepared for the images of terrifying intensity and violence that Gresk projected into his brain. The lead melted, the walls crumbled and the Doctor's mind raced on like a super-speed film of the London to Brighton car race, racing past hotels and signs, down diversions, round roundabouts, getting into all sorts of high-speed scrapes and crashes rather than stop and open his mind to the telepathic onslaught of Gresk that chased him down the road, inches behind his every turn. He had no time for relief that Gresk had chosen him and not Sarah or Harry to bear the brunt of the attack.

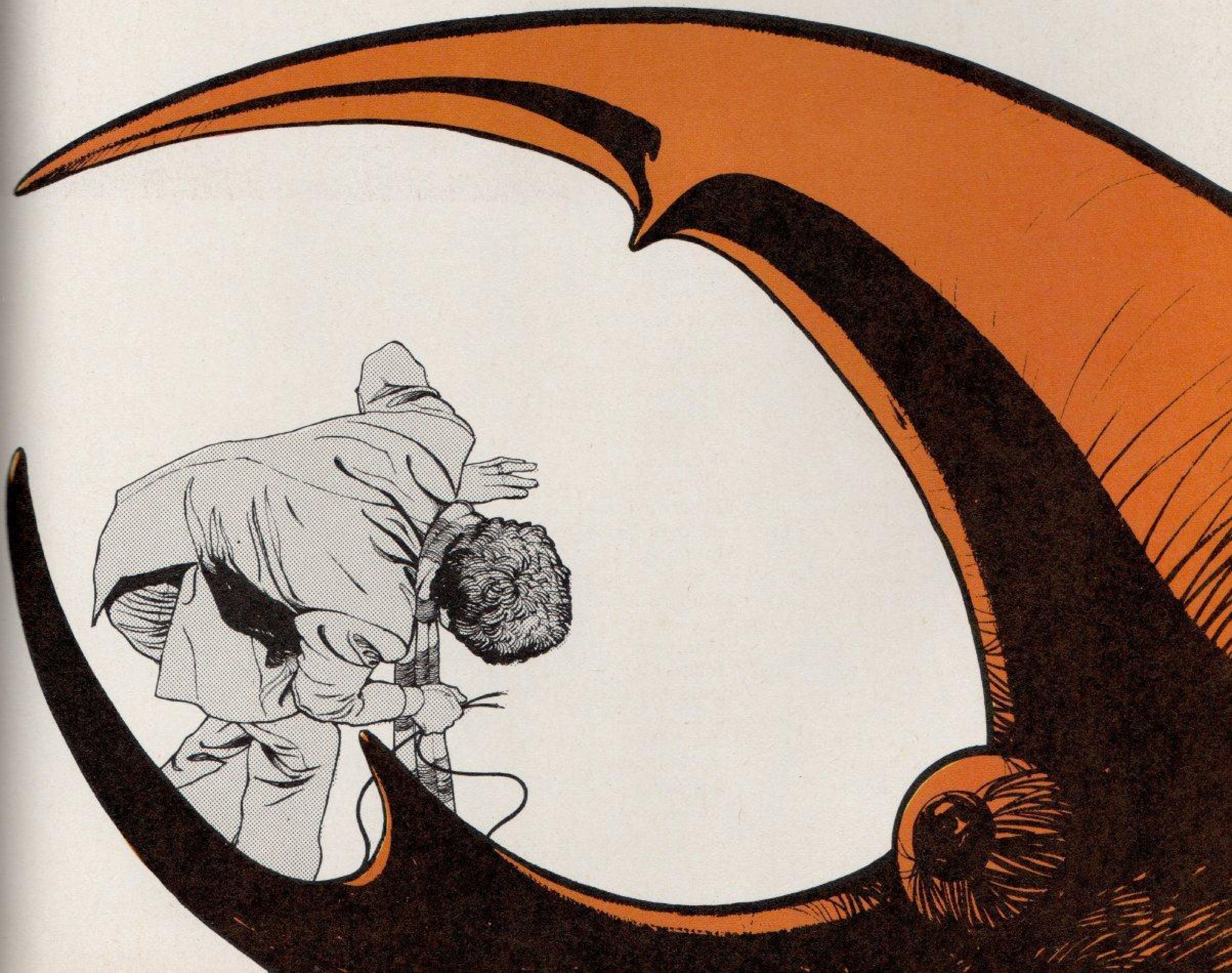
Ramstra tried to help the Doctor by intercepting Gresk's projections, but he needed most of his own power to prevent himself from being psychically savaged by Gresk.

Sarah caught an inkling of what was going on and screwed her eyes up with concentration, imagining Harry feeling sea-sick in the bath, mixtures of new fashions, weird tastes.

Harry tried slowly and calmly to empty his mind and to live out and actually become the hero's role in the last spy thriller he had read.

The Rectulator chamber was totally silent, and the Doctor was the only one moving, but still the room was in chaos. Images flew everywhere as Gresk's bodyguards tried to sense what was going on, and the Doctor, Harry, Sarah and Ramstra fought to weather the psychic storm.

Gresk started moving across the



room as the Doctor lifted the round cover at the floor of the Rectulator capsule. He pulled out a tube and searched desperately for the wires he wanted. The chief Parad towered above him, arms wriggling menacingly, the pincer-like horns on his head turned downwards, like a banderillero's lances in a nightmare bullfight.

At last the Doctor found the wires. He ripped them out and joined the ends together. A yellow ray leapt from the tube and Gresk vanished.

At once Sarah started talking wildly and Harry mopped his brow.

Ramstra let out a long hissing sound, his own way of expressing relief.

Gresk's bodyguards were uncertain as to what to do. They knew something important was about to be revealed.

The Doctor went over to the pillar and placed his hand on the tablet.

"This tablet explains why you must use the Rectulators. It was written by the Xylians, one of the oldest surviving races in the universe. They visited Paras more than a million years ago. There was death and destruction everywhere. Your ancestors were in danger of wiping themselves out. The Xylians left a party of volunteers here to try and find out what was wrong.

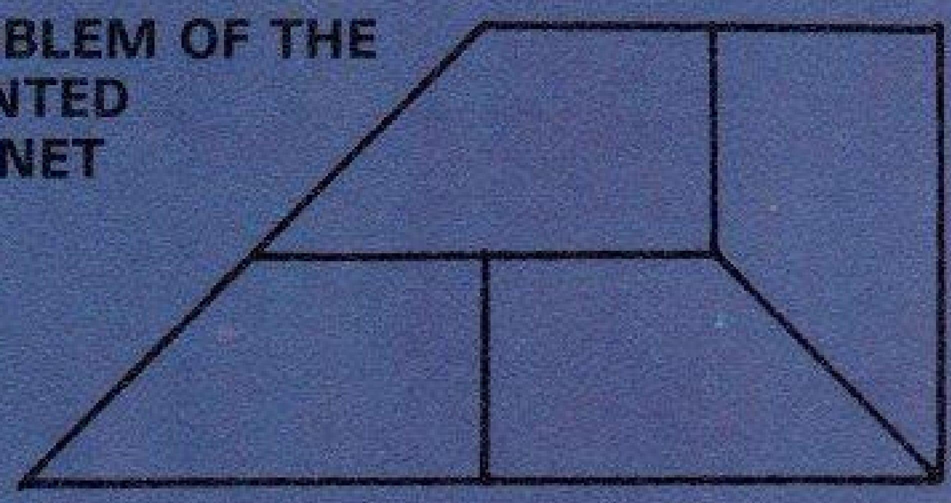
"They found, as my friend Ramstra found, that the delicate physical and psychical balance in all Parads was the root of the trouble. Even then, the planet could no longer provide nourishment and your ancestors were beginning to learn to exist without it, consuming the valuable fluids in the shell that maintain this fragile balance.

"But after sixteen seasons the fluid would dry up and the balance would be lost. The Parads entering the second half of the colour circle found themselves with immense psychical powers and no way to control them. Their behaviour was irrational and there was continual conflict. They were destroying the planet as a baby unintentionally crushes an egg. The younger Parads were more than a match for them physically, but the psychic strength of the seniors impaired their ability to function.

"And so," the Doctor walked over to one of the Rectulators, "the Xylians built these. The planet Paras had been without food for so long that the Parads had lost their ability to digest conventional nourishment. It was no good transporting them to a

ANSWERS

PROBLEM OF THE PAINTED PLANET



SPACE HAS A WORD FOR IT!

1. Manned Orbital Operations Safety Equipment. 2. Extra-vehicular Life Support System. 3. Lunar Excursion Module. 4. A Lunar Surface Experiments Package. 5. Clear Air Turbulence. 6. National Aeronautics and Space Administration. 7. Automatic Picture Transmission. 8. The first American weather satellite. 9. International Astronautical Federation. 10. European Launch Development Organisation.

MORE TO IT THAN MEETS THE EYE!

1. The circles are in fact all perfectly round, the two inside ones just look mis-shapen. 2. Both lines are the same length. 3. Although the lines of the herringbone look bent, they are actually parallel

SPACE RIDDLE-ME-REE Sarah Jane Smith

PICK THE PLANET PEOPLE

1. Mercury; 2. Mars; 3. Neptune; 4. Venus; 5. Pluto; 6. Saturn.

DR. WHO CROSSWORD

Across: 1. Alloy; 4. Decimal; 8. Tatters; 10. Rig; 11. Learn; 13. Round; 15. Peach; 16. So; 17. Ape; 18. Any; 19. Pope; 21. Offal; 24. Opals; 26. All; 27. Lap; 28. Name; 30. Ole; 31. Thirst; 34. Rare; 38. Enters; 40. Ye; 41. Sundae; 42. Eel; 43. Shed; 44. Prey.

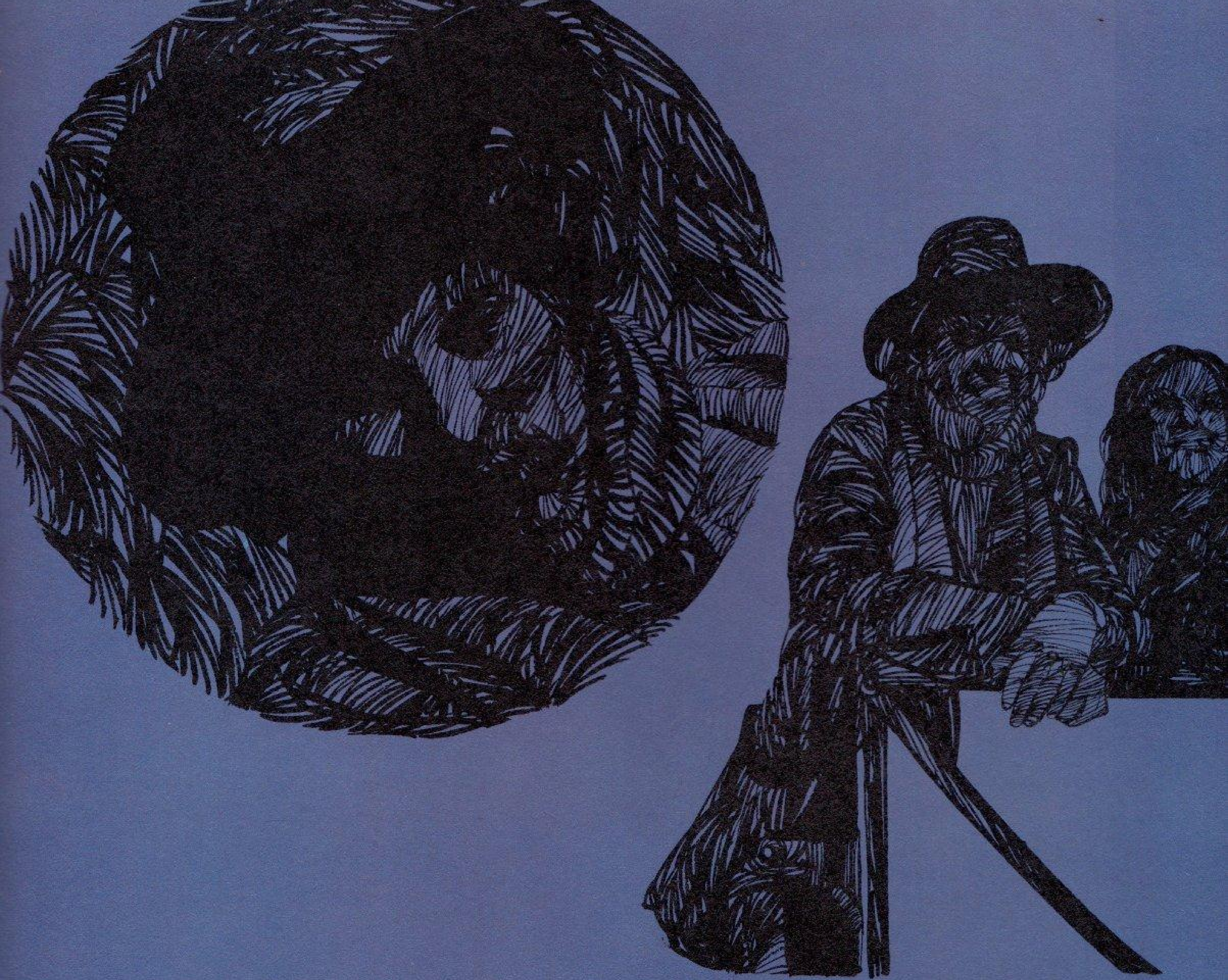
Down: 1. Anthropology; 2. Litmus paper; 3. Yield; 4. Disappoint; 5. China; 6. Marshall; 7. Light year; 9. Re; 12. Reef; 14. Noel; 20. Opal; 22. Famine; 23. Alert; 25. So; 29. Ahead; 32. Seer; 33. Tree; 35. Ash; 36. Rue; 37. End; 39. Sly.

PICK THE PLANETS

1. Jupiter. 2. Mercury. 3. Mars. 4. Pluto. 5. Uranus, whose satellites are Ariel, Titania, Oberon and Umbriel. 6. Saturn.

MOONING ABOUT

1. Madagascar; 2. Mona; 3. More than half; 4. Thieves and highwaymen; 5. *Midsummer Night's Dream;* 6. Mahomet; 7. a. Hecate, b. Astarte, c. Diana; 8. White.



more fertile place. The Xylians built these Rectulators for those Parads, red Parads, whose fluid supply was almost exhausted. A Rectulator disintegrates the Parad's body and transports its psyche to Bossgar, where the atmospheric conditions allow it to control and develop its awesome power. When they saw that they had been successful, the Xylians left."

"Then Gresk is there now?" asked Ramstra.

"Yes, he might find it difficult at first, but the others will help him. It may seem a crude solution, but when they visited Bossgar the Xylians found that the Parad psyches considered their life here as a training ground for their ceaseless struggle for spiritual perfection there."

"Then the legends were true."

"Almost. Somewhere along the line the meaning of the tablet was lost and the legends grew up. The lack of scientific data spread doubt and fear among some of the seniors. Gresk was the first to act upon that fear."

They said goodbye to the Parads at the bottom of the shaft they had come down in. Ramstra invited them back and told the Doctor to pop in to see him on Bossgar sometime. The Doctor promised he would and the three of them entered the Tardis.

"Never a dull moment, eh?" said Harry.

Sarah slumped down and closed her eyes.

"That's right," said the Doctor, "you get some rest. We want you looking nice and calm when we get back and report on this space warp. You might even get a commendation tucked away somewhere in the mountains of red tape and official secrecy. That is *if* we get back." The Doctor smiled as Sarah lifted one lid to expose her most withering gaze. "Because to tell you the truth I haven't the faintest idea where we are!"

And with a short laugh he turned and lost himself in his calculations.

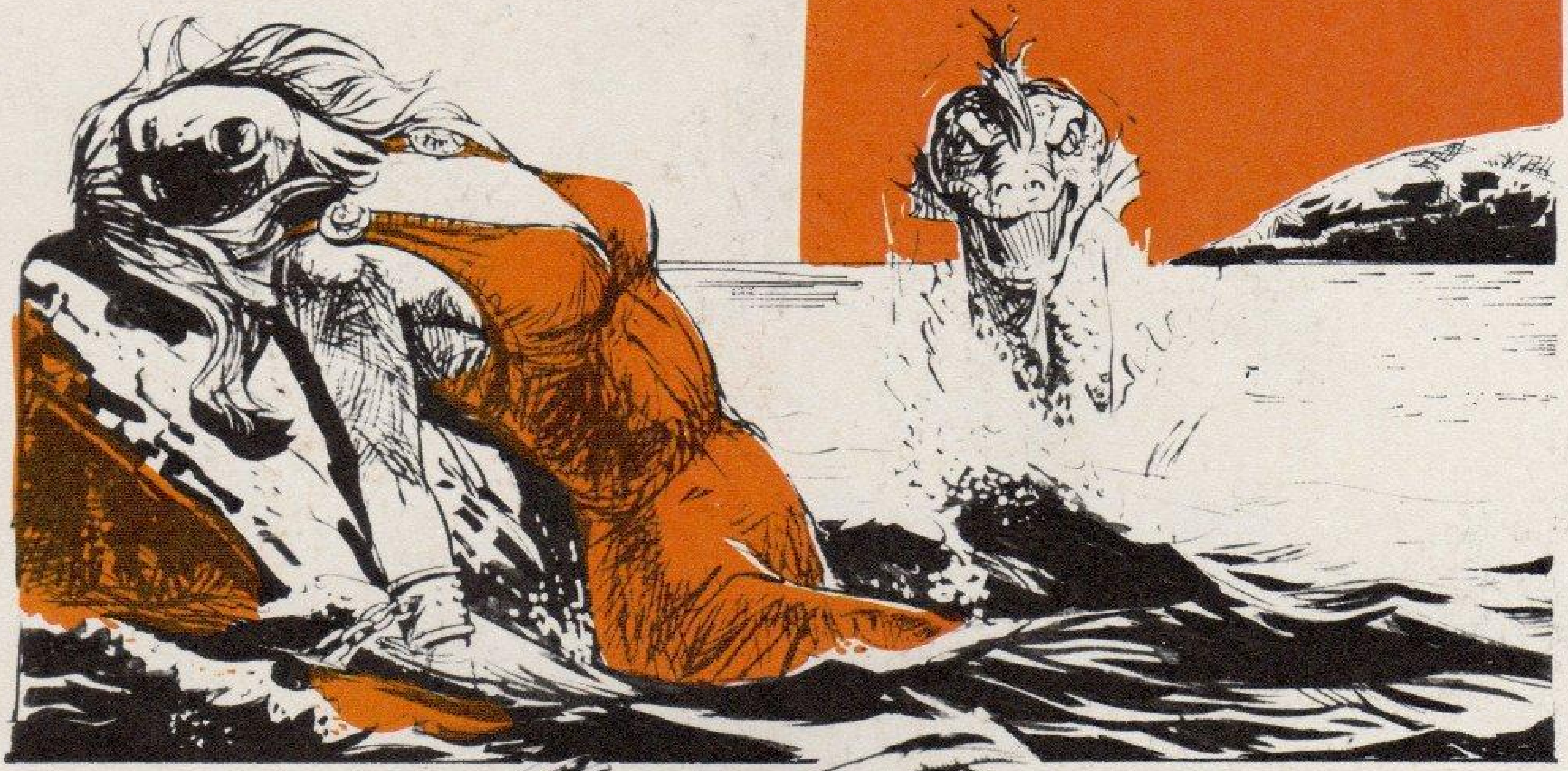
The name's the same

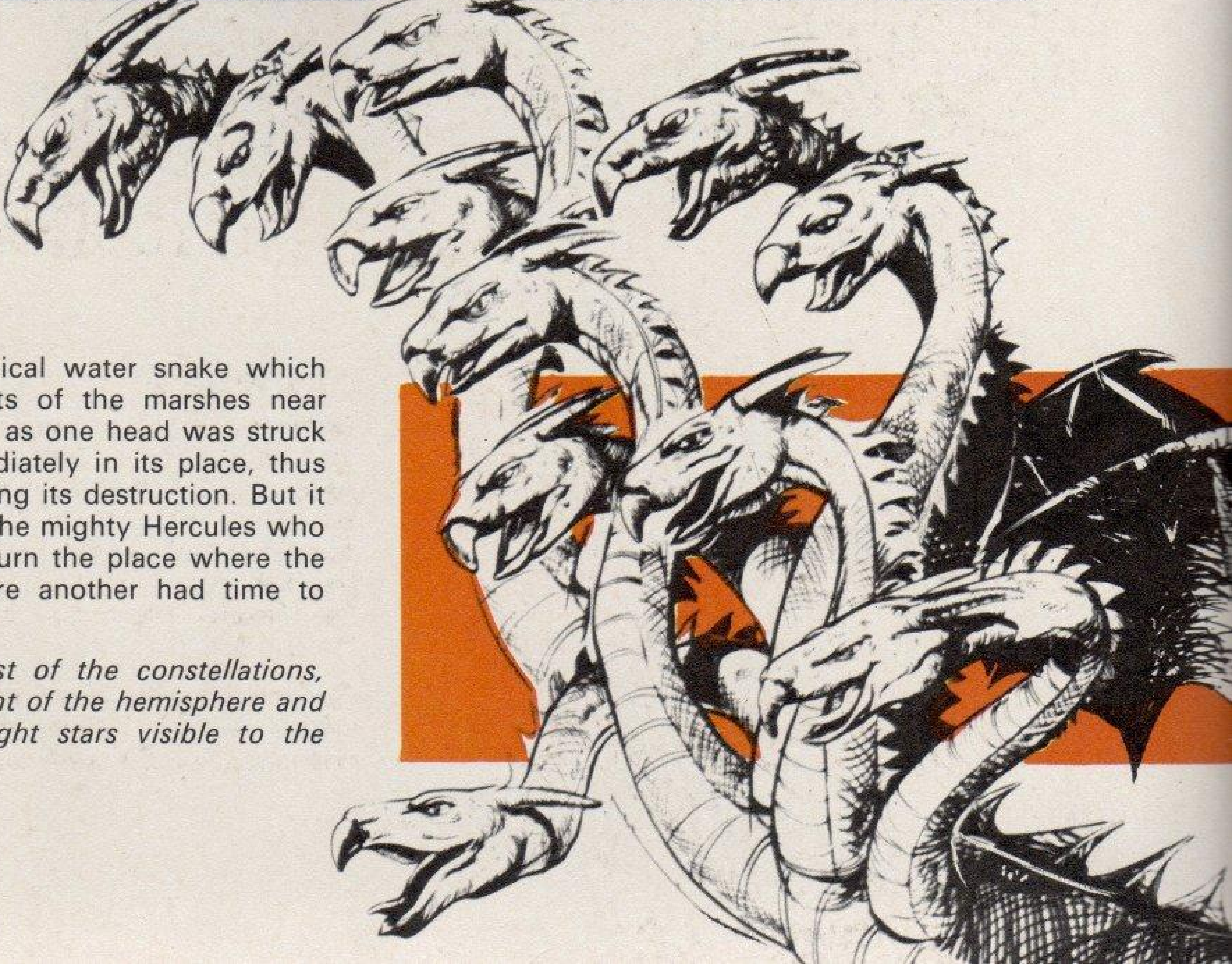
Some of the stars and satellites share their names with mythological characters.

ANDROMEDA

Andromeda was the daughter of Cepheus and Cassiopeida who, because of her mother's boasting of her beauty, was chained to a rock and offered to the sea monster sent in revenge by the Nereids. But she was rescued from this dreadful fate by Perseus who later married her, and on her death Andromeda was taken up to the sky and placed among the stars.

Andromeda is the farthest visible object to be seen by the naked eye in her Great Galaxy. This is a rotating nebula in spiral form, some 2,200,000 light years away.





HYDRA

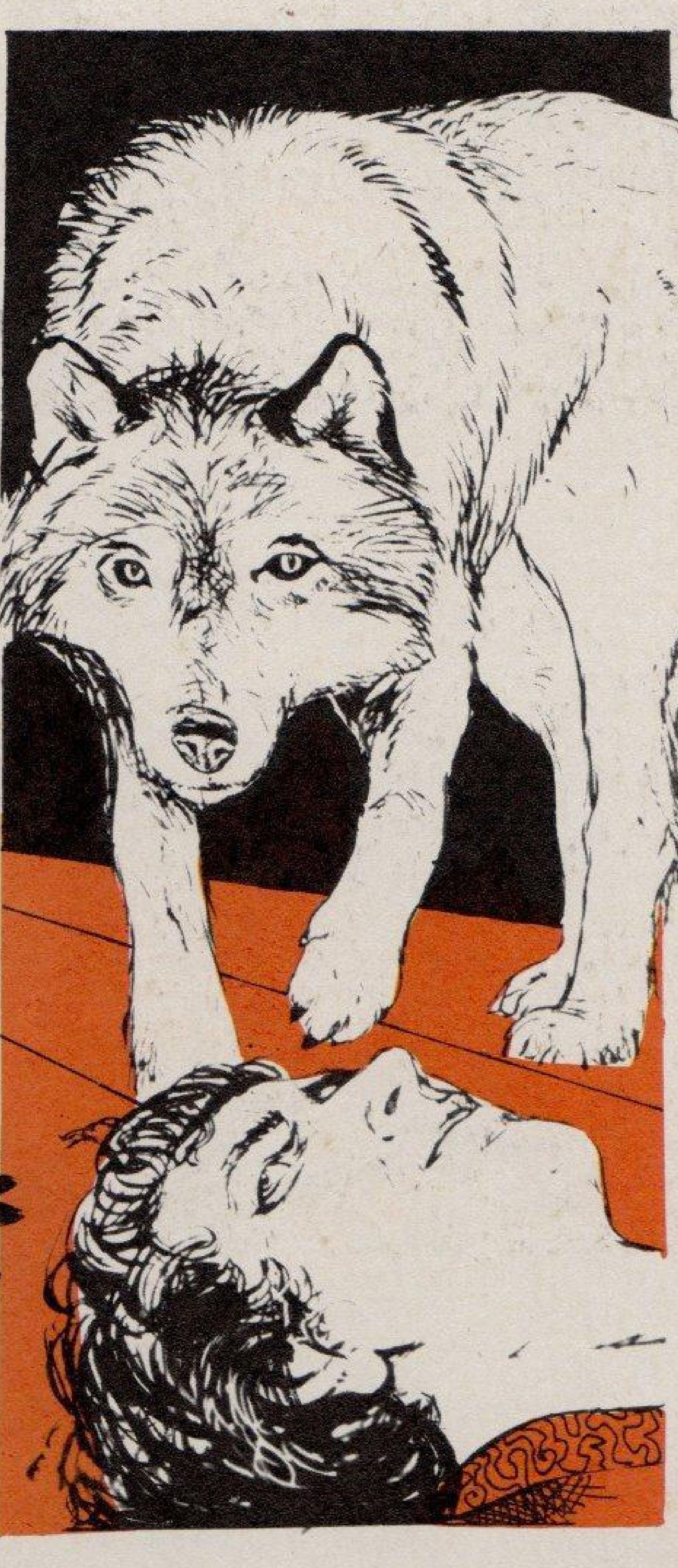
The Hydra was a mythical water snake which terrorised the inhabitants of the marshes near Argolis. It was said that as one head was struck off, another grew immediately in its place, thus almost certainly preventing its destruction. But it was finally defeated by the mighty Hercules who ordered his servant to burn the place where the head was cut off before another had time to grow in its place.

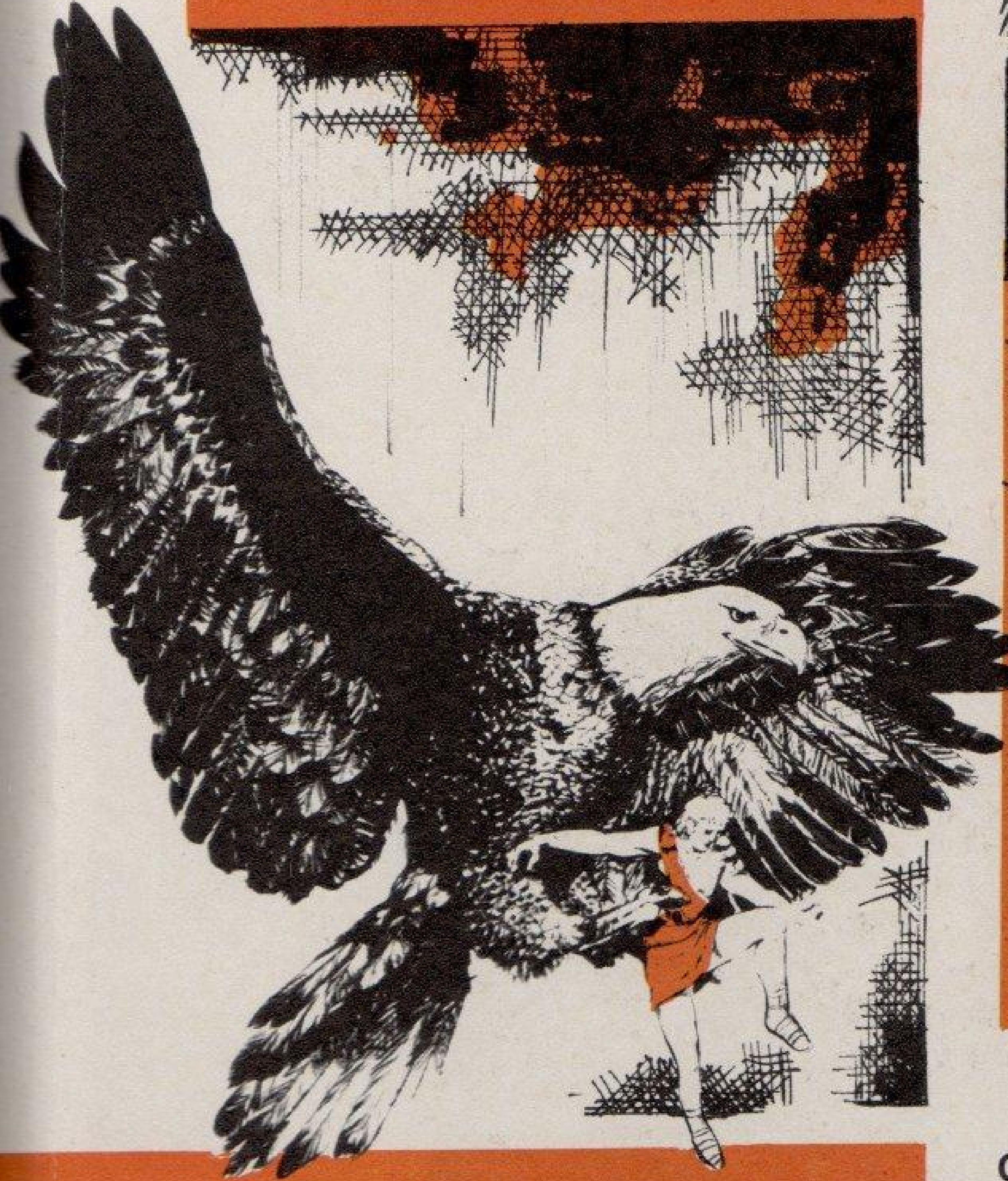
The Hydra is the largest of the constellations, covering over six per cent of the hemisphere and having at least sixty-eight stars visible to the naked eye.

SIRIUS

Sirius is known as the dog star and when it shone brightly the Romans believed that hot, stormy weather was due. Sirius was Orion the hunter's dog and when Orion was slain by Diana and taken to live in the heavens as a star, his wife and dogs and his belt and sword went up with him.

Sirius, the Dog star, is the brightest of all the stars visible in the heavens, and as there are almost six thousand of these, this is quite an achievement. It is visible in the winter months of the northern hemisphere, is some 8.7 light years away and has a luminosity twenty-six times that of the sun.





GANYMEDE

Ganymede was the son of a Trojan king, but he was so handsome that Jupiter, the king of the gods, decided that he wanted the youth to live with him on Mount Olympus. So one day Jupiter turned himself into an eagle, seized the youth from the royal palace and took him up to the heavens where Ganymede served Jupiter as his cup bearer.

Ganymede is also the name of the largest satellite, with a mass 2.11 times that of our moon and a diameter of 3,450 miles, or 5,550 km.